# 4/12/2021

# brcc keystone logo

Baton Rouge Community College

*Academic Affairs Master Syllabus*

Date Approved: 27 April 2021

Term and Year of Implementation: Fall 2021

**Course Title:** Microbiology Lab for Science Majors

**BRCC Course Rubric:** BIOL 2121

**Previous Course Rubric**:

**Lecture Hours per week-Lab Hours per week-Credit Hours**: 0-3-1

**Per semester: Lecture Hours-Lab Hours-Instructional Contact Hours**: 0-45-45

**Louisiana Common Course Number:** CBIO 2121

**CIP Code:** 26.0502

**Course Description:** Introduces microscopy, microbe structure and function, diversity (prokaryotic and eukaryotic), growth and control, metabolism, genetics, microbe interactions, and immunology and pathogens. Laboratory designed to supplement Microbiology for Science Majors. This course requires a lab fee.

**Prerequisites:**  BIOL 1033 (or BIOL 120) and BIOL 1031 (or BIOL 120L) and CHEM 1123 (or CHEM 101) and CHEM 1121 (or CHEM 101L) with grade of “C” or better

**Co-requisites:** None

**Suggested Enrollment Cap:** 28

**Learning Outcomes.** *Upon successful completion of this course, the students will be able to:*

1. Demonstrate practical knowledge of microbial diversity, characteristics, taxonomy, growth and control, reproduction, genetics, and pathology caused by microbes.

2. Solve microbiology-related practical problems by applying basic knowledge of microbiology.

3. Apply basic microbiological techniques to conduct and interpret laboratory experiments.

**Assessment Measures.** Assessment of all learning outcomes will be measured using the following methods:

1. Administration of unit exams during the semester and a comprehensive final exam at the end of the semester.

2. Instructor-designed assignments including, but not limited to, instructor observation of basic microbiological techniques, identification of unknown microorganisms, written and oral assignments, projects, homework, and quizzes. All assignments will be graded using an instructor-designed rubric.

**Information to be included on the Instructor’s Course Syllabi:**

* ***Disability Statement*:** Baton Rouge Community College seeks to meet the needs of its students in many ways. See the Office of Disability Services to receive suggestions for disability statements that should be included in each syllabus.
* ***Grading:*** The College grading policy should be included in the course syllabus. Any special practices should also go here. This should include the instructor’s and/or the department’s policy for make-up work. For example in a speech course, “Speeches not given on due date will receive no grade higher than a sixty” or “Make-up work will not be accepted after the last day of class”.
* ***Attendance Policy*:** Include the overall attendance policy of the college. Instructors may want to add additional information in individual syllabi to meet the needs of their courses.
* ***General Policies*:** Instructors’ policy on the use of things such as beepers and cell phones and/or hand held programmable calculators should be covered in this section.
* ***Cheating and Plagiarism*:** This must be included in all syllabi and should include the penalties for incidents in a given class. Students should have a clear idea of what constitutes cheating in a given course.
* ***Safety Concerns:*** In some courses, this may be a major issue. For example, “No student will be allowed in the lab without safety glasses”. General statements such as, “Items that may be harmful to one’s self or others should not be brought to class”.
* ***Library/ Learning Resources:*** Since the development of the total person is part of our mission, assignments in the library and/or the Learning Resources Center should be included to assist students in enhancing skills and in using resources. Students should be encouraged to use the library for reading enjoyment as part of lifelong learning.

**Expanded Course Outline:**

1. Lab safety, orientation to lab equipments, apparatus, chemicals etc

2. Microscopy: Brightfield, Darkfield, phase-contrast

3. Preparation of culture media, aseptic technique, and isolation of microorganisms

4. Pure culture technique and purification of bacteria

5. Prokaryotes: Bacteria: smear preparation and simple staining and negative staining

6. Prokaryotes: Differential staining: Gram staining and acid fast staining

7. Prokaryotes: Special staining: endospore and capsule staining

8. Determination of bacterial population by serial dilution and determination of dilution factor

9. Metabolism: Utilization of carbon, and nitrogen sources

10. Metabolism: Fermentation and respiration

11. Bacterial growth, number of generations and generation time

12. Eukaryotes: Identification of protozoa and algae

13. Eukaryotes: Identification of fungi (unicellular and multicellular)

14. Eukaryotes: Identification of helminthes (flatworms and roundworms)

15. Evaluation of antiseptics and antibiotics

16. Microbial diseases and microorganisms