

Microbiology 3004 Syllabus

Instructor:
Phone:
E-mail:

Office:
Office hours:

Statement About Courses in Biology

The faculty in the Biology Department pledge to work to accommodate student needs for learning—we also expect students to work with us. Here are some guidelines:

1. As usual, individual course policies, including attendance, schedules, grade calculation rubrics, etc., will be listed in the course syllabus. PLEASE READ THE SYLLABUS BEFORE EMAILING QUESTIONS.

2. Exam policies:

1. It is the right and duty of the instructor to schedule exams and quizzes (except for the final exam, which will be scheduled by the College). Exams must be taken in the time limits specified for each exam.
2. Absence from an exam will be treated as described in the course syllabus, and any make-up exam policy will also be described in the course syllabus.
3. **It is the right and duty of the instructor to determine the format and content of all course exams.**

3. All assignments will be due at the specified time. Extension requests will be considered by the instructor, and may or may not be granted at the instructor's discretion.

4. We understand that emergency situations after the Withdrawal date might make it impossible to complete a course. Under these circumstances, a grade of IN(complete) *may* be issued in *some* courses. However, some courses (especially lab courses) do not lend themselves to offering make-up activities, meaning that some students may still fail the course despite the best intentions of the department. In such cases, **you should petition the BC Committee on Course and Standing for a retroactive grade of W**, which carries no implication of failure and no GPA penalty.

5. Appeals Policy of the Biology Department

We will only consider appeals after you have addressed the issue to the instructor and received what you consider an inadequate reply or have had no reply within seven days after you contacted the instructor. Some additional considerations:

- Appeals regarding timing conflicts of exams may be considered **only** if there is evidence of the conflict based on academic issues.
- We will not consider any appeals about exam scheduling, format, or content. Those are determined only by the instructor.
- We will only consider exam-grading appeals if you can demonstrate that your answers were incorrectly marked.

If you wish to file an appeal, fill out the Biology Department appeal form:

<http://www.brooklyn.cuny.edu/web/academics/schools/naturalsciences/undergraduate/biology/fall2020/student-concern-form.php>

- **We will not consider appeals from the Dean, Provost, President, Parent, Chancellor, Mayor, Governor,** or other officials unless the Biology Department appeal form has been filled and submitted.

Introduction to Microbiology Lab 3004:

Note – due to the ongoing COVID-19 pandemic, we are making modifications to some protocols in the BIOL 3004 (Microbiology) lab in order to reduce contact between individuals in the lab and to permit physical distancing. Students will be required to meet all of the CUNY/BC requirements for coming onto campus and attending lab. As the pandemic creates a shifting environment, it may be necessary to change safety precautions to meet these changing conditions. Students are encouraged to wear masks at all times when in the Microbiology 3004 lab. The masking policy is subject to change by the College, CUNY, or NYS, and may be updated during the semester to account for changes in risk of SARS-CoV-2 infection. We may also require students to wear plastic face shields if this is mandated by College, CUNY, or NYS safety policy.

Introduction - By definition the vast majority of microorganisms are too small to be detected by eye, and therefore other methods must be used to identify and characterize microorganisms. Light microscopy is one of the most important methods used to examine microorganisms and this course includes a number of sample preparation methods to examine microorganisms under the microscope. However, many microorganisms are either indistinguishable by standard microscopic techniques, or too small (viruses for example) to be seen using light microscopy. A number of other diagnostic approaches must be employed to gather more information about unknown microbial samples. In this lab we will study a number of biochemical tests that are used to differentiate bacteria based on their metabolic properties or the presence of certain key properties (such as antibiotic resistance). The goal of this course is for students to learn the physical and biochemical properties of a variety of microorganisms. In the course of this lab you will also examine how to safely grow and manipulate microorganisms. You will learn about several important staining techniques and diagnostic tests that can be used to identify an unknown microorganism.

Suggested Laboratory Photographic Atlas

Microbiology: A Photographic Atlas for the Laboratory (Leboffe and Pierce) 5th Edition
Publisher: Morton Publishing
ISBN#: 1617319031

Required reading assignments will be listed by your instructor.

Safety

The labs have been designed to prioritize safety. You must always follow the safety instructions given by the lab instructor. *You should treat all the microorganisms as potential pathogens.* Listed below are some of the important safety guidelines for the microbiology lab. A more complete list of safety guidelines is provided in your lab manual.

- Eating, drinking, smoking, handling contact lenses, applying cosmetics, and storing food for human use are not permitted in the work areas.
- Cell phones and other handheld devices are NOT permitted in the laboratory.
- You must wear a face mask and lab coat in the microbiology laboratory at all times.
- You must wear safety glasses when working with the Bunsen burner and liquids in the lab.
- You must wash your hands after you handle viable materials, after removing gloves, and before leaving the laboratory.
- You must wear gloves when working with living microorganisms or any shared reagents in the lab.
- Mouth pipetting is prohibited; mechanical pipetting devices are used.
- Policies for the safe handling of sharps are instituted.
- All procedures are performed carefully to minimize the creation of splashes or aerosols.
- Work surfaces are decontaminated when you enter and leave the lab, and after any spill of viable material.
- COVID-19 precautions: we will be wearing masks and physically distancing in the BIOL 3004 lab.

Course requirements and grading

You must attend the laboratory sessions on time. This applies to both in-person and remote online sessions.

There are reading assignments from the Photographic Atlas for most weeks during the semester. There may also be written assignments, such as answering the questions from the lab manual. These assignments will be due at the start of the subsequent week's lab session unless otherwise noted. In some cases you ***may not*** be permitted to begin the next lab until your assignment from the previous week is complete. Assignments more than a week late will not be accepted.

You will be expected to keep a detailed **lab notebook** that records the work you undertake in the lab over the course of the semester. The lab notebook may be checked by your instructor for completeness and accuracy at any time during the semester without advance notice.

Final grades* will be determined by the weighting of the following course components:

Quizzes** (2x)	= 7.5% (each)
Assignments	= 15% (total)
Lab Participation	= 15%
Midterm Exam	= 25%
Final Exam	= 30%

* Final grades are curved in a harmonization process across all the Micro 3004 laboratory sections. Your grade may shift up or down after the grade harmonization. The weighting of grade components will not change as a result of harmonization, nor will your relative rank in your section change.

** Instructors may give “pop”/unscheduled quizzes. Scores for “pop”/unscheduled quizzes will be included in the Assignments category.

Important Dates:

Quiz #1:	week 3 or 4
Midterm Practical Exam:	week 7 or 8
Quiz #2:	week 10 or 11
Final Exam:	week 14

Laboratory Attendance:

Attendance at the laboratory sessions of *your assigned section* is required.

You must come to the lab on time.

Failure to attend more than two of your lab sessions automatically results in an F for the course. See the Undergraduate Bulletin for the state law regarding non-attendance because of religious beliefs.

Learning Goals and Objectives:

Following the successful completion of this lab you should understand several essential microbiological techniques, including: sterile technique, safely working with live microbial cultures, streaking for colony isolation, correct use of a compound light microscope, Gram staining, culture inoculation, microbial enumeration, serial dilutions, and pipetting. You will also become familiar with the morphological, metabolic, and potential disease-associated properties of the microorganisms used and discussed during the lab. Finally, you should be able to interpret the data you obtain from your experiments, be able to identify the limitations of the experiments you perform, and you should be able to design additional experiments to address new questions that arise from your initial studies.

Specific core microbiology laboratory skills:

There are several important skills that you will study over the course of the semester. These skills are:

- Use of a compound light microscope
- Aseptic technique
- Culture inoculation
- Streak plating
- Spread plating
- Documenting and reporting on experimental protocols, results and conclusions
- Gram staining of bacteria
- Cell enumeration (direct count and viable count)
- Serial dilutions
- Tube, plate, sample labeling

The skills will be tested on scheduled and unscheduled quizzes and on the midterm and final exam.

Core microbiology lab competencies:

The microbiology lab will introduce important scientific thinking skills. This list has been developed and promoted by the American Society of Microbiology. These will include:

- a) Ability to apply the process of science
 - i) Demonstrate an ability to formulate hypotheses and design experiments based on the scientific method.
 - ii) Analyze and interpret results from a variety of microbiological methods and apply these methods to analogous situations.
- b) Ability to use quantitative reasoning
 - i) Use mathematical reasoning and graphing skills to solve problems in microbiology.
- c) Ability to communicate and collaborate with other disciplines
 - i) Effectively communicate fundamental concepts of microbiology in written and oral format.
 - ii) Identify credible scientific sources and interpret and evaluate the information therein.
- d) Ability to understand the relationship between science and society
 - i) Identify and discuss ethical issues in microbiology

Center for Disability Notice:

The Center for Student Disability Services (CSDS) is committed to ensuring students with disabilities enjoy an equal opportunity to participate at Brooklyn College. In order to receive disability-related academic accommodations, students must first be registered with CSDS. Students who have a documented disability or suspect they may have a disability are invited to schedule an interview by calling (718) 951-5538 or emailing

Josephine.Patterson@brooklyn.cuny.edu If you have already registered with CSDS, email Josephine.Patterson@brooklyn.cuny.edu or testingcsds@brooklyn.cuny.edu to ensure accommodation emails are sent to your professor.

University's policy on Academic Integrity:

The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both. The complete text of the CUNY Academic Integrity Policy and the Brooklyn College procedure for policy implementation can be found at www.brooklyn.cuny.edu/bc/policies. If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the student admits the violation, the faculty member MUST report the violation. Students should be aware that faculty may use plagiarism detection software.

The full academic calendar, including many other important dates, is available on the Office of the Registrar's website.