

## **Microbiology 3003**

Instructor contact information: TBA

E-mail:

Class meetings: TBA

Room: TBA

**Office hours: TBA**, or by appointment.

### Course Summary:

This course is an introduction to the diversity of microorganisms, their structure, their metabolism and the molecular mechanisms underlying their growth and replication, and the composition and dynamics of microbial communities associated with humans and communities from the environment. The course will discuss the influence of microorganisms on 1) human health and disease, 2) the implementation of effective hygienic practices, 3) the development of public health institutions and infrastructure, 4) bioengineering and biotechnology, and 5) the environment. The course will examine current health, environmental, agricultural, and technological issues that are closely tied to the field of microbiology.

### Learning Goals and Objectives:

Following completion of the course students should be able to describe the most important characteristics of the major classes of microorganisms, including bacteria, viruses, fungi, and algae. Students should be able to describe the cellular, molecular, and biochemical differences (and similarities) between prokaryotes and eukaryotes. Students should be able to give examples of specific microorganisms, the environmental niches they occupy, and what special cellular, molecular, or biochemical features allow them to thrive in those niches. Students should be able to provide specific examples of bacterial, viral, and fungal pathogens, the diseases that they cause, and the virulence mechanisms they employ to evade human immune responses. Students should be familiar with the experimental contributions to the field made by prominent microbiologists, cell biologists, immunologists, biochemists, and ecologists. At the completion of the course students should feel prepared for advanced level coursework in microbiology, infectious diseases and immunology, epidemiology and public health, biotechnology, or environmental sciences. Students should finish the course with an appreciation and understanding of the fundamental role microorganisms play in daily life and how they have shaped culture and society throughout history.

### **Required Textbook:**

***Microbiology: A Human Perspective* Nester et al 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> or 10<sup>th</sup> edition, McGraw Hill**

### **Grading:**

<u>Component</u>	<u>Percent of final grade</u>
Quizzes, assignments, participation.....	25 %
First midterm exam .....	25 %
Second midterm exam.....	25 %
Final Exam .....	25 %

### **Attendance:**

This course will meet at TBA. **Attendance is required** at each meeting. You must arrive on time, and you must stay for the entire class. **Please email me if your schedule unexpectedly changes and you are unable to attend class.**

\*Please do **not** come to class if you think you might have COVID 19\*.

### **Quizzes:**

**There will be 4 discussion board quizzes.** These will feature a single short-answer question based on the material we have covered in textbook chapters, lectures, our online discussions and/or assigned homework. The format will be a **post-first discussion-board post**. (Post-first means that after submitting your answer will you be able to read other student answers in the discussion board, and they will be able to read your answer). **In addition to writing your succinct and logical answer, you will respond to at least one other student's post**, referencing course material in your response. Both your answer *and* your reply to someone else's post are required for full credit of **2 points**. Brooklyn College *writing across the curriculum* resource for students:

<https://libguides.brooklyn.cuny.edu/c.php?g=898143&p=6614490>

There will be NO make-up quizzes. Your points will be available in *my grades*.

**Additionally**, there will be **10 pop mini quizzes** with 5 questions each. These will be taken online *before* the lecture in which the chapter content is covered. Your points will be recorded and available in *my grades*.

### **Article-reading, videos and assignments**

Each week you **will review videos related to course content, and sometimes there will be additional articles to read. Periodically you will get assignments about the article or video content. These will be available in the assignments tab. Your completed assignment points will be directly entered in my grades. There will be 5 assignments, worth 1 point each.**

**8 points:** 4 discussion board quizzes (2 pts. each)

**10 points:** 10 chapter-pop-quizzes (1 pt. each)

**5 assignments:** (1pt. each - 5 points total)

**= 23 points**

**+ participation grade (2 pts – based on attendance, class participation and quality of writing/thought given to discussion board responses and assignments.** These points will NOT appear in your “*my grades*” folder.

**= 25 points total.**

### **Exam schedules\*:**

**Midterm exams: TBA.**

**Final Exam TBA**

\* Students must take the midterm and final exams at the scheduled times. **Scheduled midterm exams dates may change with advance notice.**

### **Tips for Effectively Studying and Preparing for Quizzes and Exams**

Students should expect to devote 5-7 hours of focused studying outside of class for every hour in class. (**>15 hrs./week.**) Students should come to class having reviewed the assigned materials and prepared to ask and answer questions. There are several useful resources you have for this class:

- i. Lectures, in-class discussion, assignments
- ii. Textbook
- iii. Power Point presentation slides and other weekly blackboard-curated reading and viewing assignments.
- iv. Office hours

Prior to each class meeting follow these steps:

- 1) Read the **key terms** and **learning outcomes** from each assigned chapter to see what concepts/material are being stressed.

- 2) Read the assigned textbook chapter. Take notes on your reading. Write down any questions you have and make note of concepts that you find confusing (or interesting) to discuss in our class meeting.
- 3) Read assigned articles and view assigned videos. Take notes on your reading and viewing. Write down any questions you have and make note of concepts that you find confusing (or interesting) to discuss in our class meeting.
- 4) Come to class *on time* and with your questions written down in your notebook. If your questions are not addressed, make sure you interrupt and ask your questions during class. If you do not ask your questions during class, then come to *office hours* with your questions.
- 5) After lecture, re-read the *textbook* chapter and go through the *Power Point* presentation again. Write down any new questions you have and make note of concepts that you still find confusing. Make sure you find the answer to the remaining questions by asking them in the next class, coming to *office hours*, or answering them with classmates.
- 6) Make sure you are comfortable with any **new terms or definitions** that were introduced in the chapter material or blackboard collaborate meeting.
- 7) The exams will consist of questions that are very similar to the questions at the end of the chapters. You should prepare written, correct, complete, answers for all of the questions at the end of the chapters. **Work with other students** to confirm that your answers are correct and complete. If you cannot find the answers to certain questions, or you are unsure if your answer is correct for a certain question, **come to office hours** to check and make certain you are on the right track.
- 8) Spend a few days before the actual exam going over your written answers so you can answer quickly during the exam itself.
- 9) Be sure to come to every class meeting *prepared* and *on time*. **There may be quizzes and assignments that contribute to your grade given during class time. In addition, during class is the best time to ask any questions you have on the course material.**

As an educator, I support the **rights of undocumented students to an education**. If you have any concerns in that regard, feel free to discuss them with me, and I will respect your wishes concerning confidentiality. For resources and support, please visit **Brooklyn College's Immigrant Student Support Office** located at **117 Roosevelt Hall**. You can also contact them via email at [ISSO@brooklyn.cuny.edu](mailto:ISSO@brooklyn.cuny.edu) or via phone at 718-951-5023.

**Center for Disability Notice:**

The Center for Disability Services (CSDS) is committed to ensuring students with disabilities enjoy an equal opportunity to participate at Brooklyn College. To receive disability-related academic accommodations, students must first be registered with the Center for Student Disability Services. Students who have a documented disability or suspect they may have a disability are invited to set up an appointment by calling (718) 951-5538 or emailing [Josephine.Patterson@brooklyn.cuny.edu](mailto:Josephine.Patterson@brooklyn.cuny.edu). If you have already registered with the Center for Student Disability Services, email [Josephine.Paterson@brooklyn.cuny.edu](mailto:Josephine.Paterson@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](http://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.

Link to the library website: <http://www.brooklyn.cuny.edu/web/academics/library.php>

**Important microbiology lecture dates:**

**No class: TBA.**

**Midterm 1: TBA**

**Midterm 2: TBA**

**Last lecture: TBA**

Last day to withdraw from a course with a "W" grade: TBA (See calendar)

**Final exam: TBA**

**VERY IMPORTANT:**

Please be sure that **your email link on the blackboard is the one that you use** and **check regularly** so you will be sure to receive important course updates and announcements.

**Need help with blackboard?**

[https://libguides.brooklyn.cuny.edu/Blackboard\\_for\\_Students](https://libguides.brooklyn.cuny.edu/Blackboard_for_Students)

## Lecture and Reading Schedule

<b>First Meeting (TBA)</b>	Introduction to <b>Microbiology 3003</b> – first meeting
<b>Section 1</b>	<b>Microbial morphology, growth, metabolism, microbial ecology</b>
Week 1	Ch. 1 Introduction to Microbiology (Ch. 2 Molecules of Life)
Week 2	<b>Ch. 3 Microscopy and Cell Structure</b>
Week 3	Ch. 4 Dynamics of Microbial Growth
Week 4	Ch. 5 Control of Microbial growth
Week 5	<b>Ch. 6 Microbial metabolism - Fueling Cell Growth</b>
Week 6	Ch. 11 Bacterial and Archaeal Diversity & sections from Ch. 28 Microbial Ecology, Ch. 29 Environmental Microbiology
<b>TBA</b>	<b>EXAM 1</b>
<b>Section 2</b>	<b>Bacterial genetics, gene regulation, antimicrobial resistance, bacterial viruses</b>
Week 7	<b>Ch. 7 The Blueprint of Life, from DNA to protein</b>
Week 8	<b>Ch. 8 Bacterial Genetics</b>
Week 9	Ch. 9 Biotechnology sec. 1-3, <i>CRISPR</i>
Week 10	<b>Ch. 13 Viruses: Bacteriophage, Animal viruses</b>
TBA	<b>Exam 2</b>
<b>Section 3</b>	<b>Host-microbe interactions, immunity, epidemiology</b>
Week 11	<b>Ch. 14 Innate immune response</b>
Week 12	<b>Ch. 15 Adaptive Immune Response</b>
	<b>Spring break (if it is a spring semester)</b>
Week 13	Ch. 18 Applications of Immune Response – vaccination, cancer immunology
Week 14	Ch. 19 Epidemiology, begin Ch. 16 Host-microbe Interactions
Week 15	Ch. 16 Host-Microbe interactions
<b>TBA</b>	<b>FINAL EXAM</b>