

*This syllabus is provided as a general informational guide. Some of the information may vary depending on the specific course section and instructor. Different sections of the same course may require different textbooks. Verify the section specific textbook information in the CUNY's Academic Course Schedule Web Page. Modifications of the grading system presented here will be communicated by the instructors of the sections when they meet the class.*

## BOROUGH OF MANHATTAN COMMUNITY COLLEGE

The City University of New York

Department of Science

### FUNDAMENTALS OF MICROBIOLOGY BIO230

**Class Hours: 6**

**Lecture Hours per Week: 3**

**Laboratory Hours per Week: 3**

**Semester:** Spring 2021

**Instructor Information (Phone#, Office#, email)**

**Credits:** 4

**BIO230 is an elective science course that DOES NOT fulfill the microbiology requirement for Nursing or other Allied health programs.**

**Course Description:** BIO230 is a general Microbiology course that teaches students about microorganisms' evolution, structure, metabolism and genetics. The course also covers the essentials of microbial ecology, the interactions of microorganisms with other living organisms as well as how microorganisms can be used in different industries. The laboratory section will introduce students to several techniques for isolation, culture, differentiation and identification of microorganisms. Also, students will be exposed to current approaches for analyzing DNA and proteins.

**Prerequisites:** BIO 220 and CHE 201

**Corequisites:**

<b>Course Student Learning Outcomes (Students will be able to...)</b>	<b>Measurements (means of assessment for student learning outcomes listed in first column)</b>
1. Students will be able to differentiate microorganisms based on structural and functional characteristics.	1. Quizzes and examinations.
2. Students will be able to learn about microbial growth and how to control it, microbial metabolism and genetics.	2. Quizzes and examinations.
3. Students will be able to understand the relevance of microorganisms in different ecosystems, including the human body.	3. Quizzes and examinations.
4. Students will be able to describe the different applications that microorganisms have in the food and medical industries, among other industries.	4. Quizzes and examinations.
5. Students will be able to isolate, culture, and differentiate microorganisms while using sterile technique and following BSL-1 laboratory safety practices.	5. The students will have a laboratory project that will require writing a report. The students will be also engaged in team presentations and two exams will be given during the course.

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**Below are the college's general education learning outcomes, the outcomes that are checked in the left-hand column indicate goals that will be covered and assessed in this course. (Check at least one.)**

	<b>General Education Learning Outcomes</b>	<b>Measurements (means of assessment for general education goals listed in first column)</b>
<input type="checkbox"/>	<b>Scientific Reasoning</b> - students will be able to apply the concepts and methods of the natural sciences.	Students will assimilate class and laboratory information in order to answer questions related to Microbiology.

**Required Lecture Text:**

Title: Precott's Microbiology

Authors: Willey, Sherwood and Woolverton

Publisher: McGraw-Hill Publishing

Edition: Tenth Edition, 2017

**ISBN #:** 978-1-30-735703-5, \$78.00 (this is the ebook/Connect access) or,

**ISBN #:** 9781307357042, \$106.00 (this is the Print (color) + ebook/Connect access)

Lecture Text buying options:

1. Direct from McGraw-Hill via Connect: Connect Plus – access to online material plus the full eText and SmartBook. Option on an upgrade for a loose-leaf copy of the textbook. **BEST OPTION FOR STUDENTS. See attached document for instructions on how to purchase via Connect website ([PAGE 5](#))**

OR

2. Loose leaf version of book with ConnectPlus (online material with eText and SmartBook)

**Required Laboratory Text:**

Title: Microbiology: A Laboratory Manual (BMCC customized)

Author: Benavides, Salm, Thompson, Zaitsev

Publisher: Morton Publishing

Edition: 1e, 2016

**ISBN #:** 978-1-61731-845-0

Laboratory Manual buying options:

1. Only available at BMCC bookstore

**Use of Technology:** Blackboard and Poll Everywhere

**Evaluation and Requirements of Students:**

Lecture Examinations: 60%

Laboratory Examinations: 20%

Other Assignments: 20%

Final Examination (Included in the 60% Lecture Examination)

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### **Class Participation**

Participation in the academic activity of each course is a significant component of the learning process and plays a major role in determining overall student academic achievement. Academic activities may include, but are not limited to, attending class, submitting assignments, engaging in in-class or online activities, taking exams, and/or participating in group work. Each instructor has the right to establish their own class participation policy, and it is each student's responsibility to be familiar with and follow the participation policies for each course.

BMCC is committed to the health and well-being of all students. It is common for everyone to seek assistance at some point in their life, and there are free and confidential services on campus that can help.

**Single Stop** [www.bmcc.cuny.edu/singlestop](http://www.bmcc.cuny.edu/singlestop), room S230, 212-220-8195. If you are having problems with food or housing insecurity, finances, health insurance or anything else that might get in the way of your studies at BMCC, come by the Single Stop Office for advice and assistance. Assistance is also available through the Office of Student Affairs, S350, 212-220- 8130.

**Counseling Center** [www.bmcc.cuny.edu/counseling](http://www.bmcc.cuny.edu/counseling), room S343, 212-220-8140. Counselors assist students in addressing psychological and adjustment issues (i.e., depression, anxiety, and relationships) and can help with stress, time management and more. Counselors are available for walk-in visits.

**Office of Compliance and Diversity** [www.bmcc.cuny.edu/aac](http://www.bmcc.cuny.edu/aac), room S701, 212-220-1236. BMCC is committed to promoting a diverse and inclusive learning environment free of unlawful discrimination/harassment, including sexual harassment, where all students are treated fairly. For information about BMCC's policies and resources, or to request additional assistance in this area, please visit or call the office, or email [olevy@bmcc.cuny.edu](mailto:olevy@bmcc.cuny.edu), or [twade@bmcc.cuny.edu](mailto:twade@bmcc.cuny.edu). If you need immediate assistance, please contact BMCC Public safety at 212-220-8080.

**Office of Accessibility** [www.bmcc.cuny.edu/accessibility](http://www.bmcc.cuny.edu/accessibility), room N360 (accessible entrance: 77 Harrison Street), 212-220-8180. This office collaborates with students who have documented disabilities, to coordinate support services, reasonable accommodations, and programs that enable equal access to education and college life. To request an accommodation due to a documented disability, please visit or call the office.

### **BMCC Policy on Plagiarism and Academic Integrity Statement**

Plagiarism is the presentation of someone else's ideas, words or artistic, scientific, or technical work as one's own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations, require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism. Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC's Web site, [www.bmcc.cuny.edu](http://www.bmcc.cuny.edu). For further information on integrity and behavior, please consult the college bulletin (also available online).

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**FOR HOMEWORK PLEASE SEE THE CONNECT STUDENT REGISTRATION INFORMATION COURSE. REGISTRATION MUST BE DONE IMMEDIATELY AFTER THE FIRST LECTURE.**

WEEK	DATE	TOPIC	PAGES IN TEXTBOOK	EXAMS
1		The Evolution of Microorganisms and Microbiology	Chapter 1: 1-21	
2		Bacterial Cell Structure	Chapter 3: 22-59; Sections from Chapters 5	
3		Viruses and Other Acellular Agents	Chapter 6: 79-101	
4		Microbial Growth Control of Microbial Growth	Chapter 7: 102-141 Chapter 8: 142-157	
5		Bacterial Genome Replication and Expression	Chapter 13: 234-270; Sections from Chapters 14 and 15	Exam#1
6		Bacterial Genome Replication and Expression (continued)	Chapter 13: 234-270; Sections from Chapters 14 and 15	
7		Mechanisms of Genetic Variation	Chapter 16: 319-349	
8		Microbial Taxonomy and the Evolution of Diversity Biogeochemical Cycling and Global Climate Change	Chapter 19: 351-371 Chapter 28: 373-386	
9		Microorganisms in Marine and Freshwater Ecosystems Microorganisms in Terrestrial Ecosystems	Chapter 30: 389-404 Chapter 31: 405-422 Chapter 43: 500-516	
10		Microbial Interactions	Chapter 32: 423-444; Sections from Chapter 35	Exam#2
11		Microbiology of Food Biotechnology and Industrial Microbiology	Chapter 41: 463-482 Chapter 42: 483-499	
12		Antimicrobial Agents	Lecture Slides	
13		Prevention of Infectious Diseases	Lecture Slides	
14		Future Perspectives in Microbiology	Lecture Slides	
15		Final Exam		

**LABORATORY**

WEEK	DATE	TOPIC	EXAMS
1		Lab safety; Ubiquity of Microorganisms; Separating a Mixture (Lab manual Sections 1 and 10)	
2		Using a Compound Microscope; Simple Stain (Lab Manual Sections 3 and 4)	
3		Differential Staining (Lab Manual Section 5)	
4		Growth Curve (Handout)	
5		Control of Microbial Growth (Lab Manual Section 17)	
6		Metabolism: Selective and Differential Media (Lab Manual Section 13)	
7		Genetics Part 1: Bacterial Transformation (Handout)	Exam#1
8		Genetics Part 2: UV Light Exposure and DNA Damage Repair (Lab Manual Section 12)	
9		Genetics Part 3: DNA Gel Electrophoresis and DNA Fingerprinting (Lab Manual Section 18)	
10		Ecology Part 1: Soil Microorganisms (Handout)	
11		Ecology Part 2: Isolation of Soil Bacteriophages (Handout)	
12		Ecology Part 3: Analysis of Water (Lab Manual Section 14)	
13		Enzyme-Linked Immunosorbant Assay (Handout)	
14		Final Exam	

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# connect®

## STUDENT REGISTRATION/PURCHASING INSTRUCTIONS

1. Go to your professor's section web address (provided by your specific professor)
2. Click the "Register Now" Button.
3. Select "Buy Online" or enter code from the bookstore package.

➤ **NOTE: Connect comes with the full ebook. After enrollment in your Connect section, you will have the option to purchase the full, loose leaf version of the print text.**

A screenshot of the "Student Registration" page. The page is divided into two main sections. The left section, titled "Have a registration code?", instructs the user to enter their registration code and provides a "Submit" button. Below this is an example of a registration code: GRFU-BYHA-6MYJ-FGMK-F9XA. The right section, titled "Don't have a code?", offers the option to "Buy access online" and includes a "Buy Online" button. Below this is a "Try before buying" section with a "Start courtesy access" button. The page also features logos for VISA, MasterCard, and American Express.

•For technical issues with registration, call **800-331-5094** or go to [Help](#)