

## U192-101: General Microbiology

**Course Format:** Online

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**Course Credits:** 3

**Prerequisites:** Completion of an introductory-level Chemistry course with a C or better or the equivalent.

**Course Level:** Introductory; Appropriate for advanced high school and first-year or higher college students.

**Course Description:** Intended to satisfy any curriculum that requires introductory-level microbiology. This course is a survey of microorganisms and their activities, with an emphasis on structure, function, ecology, nutrition, physiology, and genetics. It also offers an overview of applied microbiology (medical, agricultural, food, and industrial microbiology).

### Required Course Materials

- Paustian, T. (2014). *Through the Microscope*. (5<sup>th</sup> Ed.). Instructions for purchasing this electronic book are included in the online course.

### Course Learning Objectives

- Explain the microbes' role and relationship with the human body.
- Describe differences among microbes.
- Recognize the microbes' interaction with the world around them.

### Course Overview:

| Unit #   | LESSON TOPIC  | EVALUATED ACTIVITIES   |
|--|---|--|
| <b>1: Why you should care about microbes</b>         | 1 - Microbes exist, and some cause disease<br>2 - Microbes rule, and kindly put up with us  | Lesson 1 concept check<br>Short essay<br>Eureka Alert short essay<br>Lesson 2 concept check<br>Microbiology research and impact activity<br>Experiment design activity |
| <b>2: Microbial parts</b>                            | 3 - Microbes use the same building blocks we do<br>4 - The macromolecules of microbes are similar to ours, but have key differences<br>5 - All life forms are not the same; Archaea and Eukarya | Unit 2 Written Assignment<br>Activity  |
| <b>3: How microbes grow and how to care for them</b> | 6 - What microbes eat<br>7 - Measuring microbial growth<br>8 - Inside microbial growth<br>9 - What does microbial growth have to do with beer?<br>10 - Plants, their secret microbial friends   | Unit 3 Written Assignment<br>Activity<br>Exam 1  |

|  |  |  |
|--|--|--|
| <b>4: Controlling gene expression</b>                      | 11 - The central dogma: replication and transcription<br>12 - The central dogma: translation<br>13 - Heritable information can change<br>14 - Regulation   | Unit 4 Written Assignment<br>Activity<br>Exam 2  |
| <b>5: Microbial taxonomy and diversity</b>                 | 15 - Working out the microbial family tree<br>16 - Microbial diversity I: Know your microbes<br>17 - Microbial diversity II: Know even more about your microbes<br>18 - Microbial diversity III: Minimicrobes, the viruses   | Unit 5 Written Assignment<br>Activity  |
| <b>6: Microbes' interaction with the world around them</b> | 19 - Microbe-microbe interactions<br>20 - Host-microbe interactions<br>21 - Protecting ourselves from microbes; immunity<br>22 - Pathogens I<br>23 - Pathogens II<br>24 - Pathogens III<br>25 - Stopping the pathogens; controlling microbes<br>26 - Biotechnology | Unit 6 Written Assignment<br>Activity - Part 1<br>Unit 6 Written Assignment<br>Activity - Part 2<br>Unit 6 Written Assignment<br>Activity - Part 3<br>Exam 3<br>Exam 4 |

### Evaluation Methods

Your final grade will be based on your performance on the following:

- 1) Written Assignment Activities (60%)
- 2) Exams (40%)

#### *Written Assignment Activities (60%)*

There are eight written assignment activities in each unit, including short-essay questions, hands-on activities, scenario-based exercises, and exercises using Web-based tools. The points vary and are specified on the activity page. Each written assignment activity is weighted evenly to cumulatively account for 60% of your final grade.

#### *Exams (40%)*

*General Microbiology* has four exams, each worth 100 points. Each exam is weighted evenly to cumulatively account for 40% of your final grade. Before you take an exam, you must have satisfactorily completed all of the course assignments preceding the exam. Please note: Because some questions cannot be graded automatically, your initial exam score will change after being reviewed by the Course Facilitator.

### Exam Method: Online Without Proctoring

This course requires all students to complete exams online. Students receive one attempt on each exam.

### Grading Scale

The following grading scale is used to evaluate all course requirements and determine your final grade:

|              |              |             |              |
|--------------|--------------|-------------|--------------|
| A = 93–100   | B = 83–87.9  | C = 70–77.9 | D = 60–69.9  |
| AB = 88–92.9 | BC = 78–82.9 |             | F = Below 60 |

#### *Pass/Fail Option*

Students who enroll in an Independent Learning (IL) course under the pass/fail option will receive a final grade of S in place of a final grade equivalent to an A, AB, B, BC, or C and a final grade of U in place of a final grade equivalent to a D or F.