BIOL 2065

Division: Natural Science and Mathematics
Department: Biology
Course: BIOL 2065
Title: Introductory Microbiology Laboratory
Catalog Description:

The laboratory component allows for student application of microbiological principles with an emphasis on investigative learning and collaboration. It must be taken concurrently with BIOL 2060.

General Education Requirements: Life Science
Semesters Offered: Fall, Spring, Summer
Credit/Time Requirement: Credit: 1; Lecture: 0; Lab: 2
Clock/Hour Requirements: 0
Offered for Non-Credit: No
Prerequisites: A strong background in chemistry or biology is recommended.

Corequisites: The laboratory BIOL 2065 must be taken concurrently with the lecture BIOL 2060.

Justification:

The Introductory Microbiology Lab satisfies the science laboratory GE requirement for Snow College, nursing, and other health science prerequisites. Some majors at the four year colleges and universities require the laboratory component.

Student Learning Outcomes:

Upon successful completion of this course, students will:

- be able to differentiate bacteria based upon staining techniques and selective media
- be able to perform basic microbiological procedures such as the Gram stain, streak plating, serial dilutions, and pour plating
- appreciate the role of microbes in food, soil, and medicine
- also be able to do simple tests using microscopes, computers, other commonly available lab equipment and supplies.

Content:

This course includes:

- laboratory safety
- the use and care of the compound light microscope
- distribution of bacteria
- microbial diversity: an investigation of the properties of bacteria, fungi, protists, and algae
- staining of bacterial cells using simple, Gram, acid fast, negative, and spore stains

- growth and cultivation of bacteria using routine, selective, and differential media
- control of microbial growth using antibiotics, antiseptics, disinfectants, and radiation
- transformation of bacteria with plasmid DNA
- principles of diagnostic microbiology with an emphasis of the normal flora of the human body
- enumeration of microorganisms in water, waste water, and milk samples
- enumeration of microorganisms in soils.

General Education Outcomes:

4) Retrieve, evaluate, interpret, and deliver information through a variety of traditional and electronic media.
Students will use microscopes, other lab equipment and supplies, and computers to obtain and analyze data.

7) Apply scientific reasoning to a variety of contexts.
Students will demonstrate scientific reasoning throughout the various topics considered in course content for the laboratory in their responses to tests, quizzes, lab reports, projects, discussions, etc.

Key Performance Indicators:

We have several different faculty who teach this course. Teaching styles vary as do evaluation methods. For this reason percent ranges are listed for each category.

- Outcomes will be assessed by
  - lab reports: 40%-55%
  - quizzes: 15%-25%
  - midterm exams: 10%-25%
  - comprehensive final exam: 10%-20%.

Representative Text and/or Supplies:

One of the following texts or a comparable text will be used:

- Blauer, Sorensen, and Breakwell, *Biology 2065 Laboratory Manual,* current edition
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Optimum Class Size: 24
Maximum Class Size: 24

Signatures:

I hereby submit this course syllabus:

Allan Stevens, , Professor

I hereby find this course consistent with the goals and resources of the Biology Department:

Allan Stevens, , Professor, Chair

I hereby find this course consistent with the goals and resources of the Natural Science and Mathematics Division:

Dan Black, EdD, Associate Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)