



BIOL 1615

Division: Natural Science and Mathematics

Department: Biology

Course: BIOL 1615

Title: Biology I Laboratory

Catalog Description:

The Biology I laboratory component allows for student application of the principles learned in Biology I lecture with an emphasis on investigative learning and collaboration.

General Education Requirements: Life Science

Semesters Offered: Fall

Credit/Time Requirement: Credit: 1; Lecture: 0; Lab: 3

Clock/Hour Requirements: 0

Offered for Non-Credit: No

Prerequisites: It is recommended that the student will have successfully completed high school biology and chemistry.

Corequisites: BIOL 1610

Justification:

The Biology I laboratory (BIOL 1615) and Biology I lecture course (BIOL 1610) have been designed as the first semester courses in a year-long exposure to biology as recommended by the State Biology Group. Biology II lecture (BIOL 1620) and Biology II laboratory (BIOL 1625) will constitute the second semester courses for the majors biology sequence.

Student Learning Outcomes:

Students will know the essential qualities and key processes commonly found in life forms.

Students will have begun to understand the diversity of living organisms and their myriad interrelationships in the biological world.

Students will know how to apply systematic methods to understand the complexities of an individual organism or to distinguish among diverse species.

Students will be able to use microscopes, computers, other commonly available lab equipment and supplies.

Students will be able to read the literature of the biological sciences flexibly, analytically and imaginatively.

Students should be able to appreciate that they have been exposed to an unfortunately small number of the

myriad beauties and marvels of the living world, extant or extinct.

Students will have some understanding of the role that biology plays in modern life as well as past history.

Content:

Laboratory topics

1a. scientific method

1b. simple organic chemistry

2. light microscopy and introduction to SEM's and TEM's

3. membrane functions

4. simple enzyme kinetics

5. photosynthesis / respiration and mutant analysis

6. mitosis/meiosis and development

7. transmission genetics

8. transformation

9. gel electrophoresis / DNA fingerprinting simulation

10. bacteria and systematics

11. protists and systematics

12. fungi

General Education Outcomes:

1) Read effectively, constructively, and critically.

Students read the text and laboratory manual throughout the course. Lab reports include evaluations requiring synthesis and critical thinking processes.

2) Write clearly, informatively, and persuasively.

Lab reports include writing components where experimental observations are noted and their relationship to current scientific thought explained.

4) Retrieve, evaluate, interpret, and deliver information through a variety of traditional and electronic media.

Laboratory 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 lab reports, quizzes, discussions, etc.

Key Performance Indicators:

Students are assessed on lab reports and quizzes. There may be a lab final.

Students cannot miss more than two labs. Students missing more than two laboratories will fail the course.

Representative Text and/or Supplies:

Breakwell, Papenfuss & Sorensen. Biology 131L Laboratory Manual, current edition.

Optimum Class Size: 16

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)