

**RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE**

BIOL 111 - Principles of Biology

I. Basic Course Information

- A. Course Number and Title: BIOL-111, Principles of Biology
- B. New or Modified Course: Modified
- C. Date of Proposal: Semester: Fall Year: 2016
- D. Effective Term: Fall 2017
- E. Sponsoring Department: Science & Engineering
- F. Semester Credit Hours: 4
- G. Weekly Contact Hours: Lecture: 3
 Laboratory: 2
 Out of class student work per week: 7
- H. Prerequisite: MATH-020 Elementary Algebra
- I. Laboratory Fees: Yes
- J. Name and Telephone Number or E-Mail Address of Department Chair at time of approval: Sarah Imbriglio, 908-526-1200 Ext. 8241; sarah.imbriglio@raritanval.edu

II. Catalog Description

Prerequisite: MATH-020 Elementary Algebra

This course emphasizes common processes and structures among living things, from energy transfer to natural selection, from chemical structure to cellular structure. Included are principles governing energetics, reproduction and development, inheritance and evolution. The use of the scientific method to conduct research and experiments will encourage students to think critically about scientific research and results. Credit will not be given for both Principles of Biology and General Biology I.

III. Statement of Course Need

- A. This is a standard non-majors science course to fulfill a laboratory-based general education requirement.
- B. This course requires a lab component for students to apply the scientific method/process and generate evidence-based conclusions to scientific questions. The lab allows students to apply principles learned in the lecture portion of the course.

- C. This course generally transfers as a general education course in science with lab, a free elective, and/or a program requirement.

IV. Place of Course in College Curriculum

- A. Free Elective.
- B. This course serves as a General Education course in Science with Lab.
- C. This course meets the requirement for Education P-6 (AA), Education 5-12 (AA), Respiratory Care (AS) and Veterinary Tech (AS) programs. This course meets an option for Food and Beverage Management (AAS) program.
- D. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

- A. Introduction: Biology Today
- B. Evolution: Unifying theme
- C. The Process of Science
- D. Essential Chemistry for Biology
- E. The Molecules of Life
- F. A Tour of the Cell
- G. Cell Membranes
- H. Cellular Respiration
- I. Photosynthesis
- J. The Cellular Basis of Reproduction and Inheritance
- K. Patterns of Inheritance
- L. Molecular Biology of the Gene
- M. Gene Regulation
- N. DNA Today
- O. Evolution

VI. General Education and Course Learning Outcomes

A. General Education Learning Outcomes

At the completion of this course, the student will be able to:

1. Develop an informed understanding of the fundamental concepts in biological sciences (GE-NJ 1, 3)
2. Demonstrate the fundamentals of scientific problem solving and critical thinking (GE NJ-3)
3. Use the scientific method to evaluate a problem and generate evidence based conclusions. (GE-NJ 3).
4. Describe the role of science in their daily lives (GE NJ- 4).

B. Course Learning Outcomes

At the conclusion of the course, students will be able to:

1. Demonstrate basic laboratory techniques
2. Design experiments to address a specific observation or question
3. Organize and analyze data
4. Apply biological concepts in meaningful ways

C. Assessment Instruments

Given the outcomes described above, the following assessment methods may be used:

- A. experiments using the scientific method (required)
- B. written lab reports
- C. analysis of case studies (required)
- D. discussions
- E. weekly homework
- F. unit examinations (required)

VII. Grade Determinants

The following may be used to determine the final grade:

- A. Weekly online homework
- B. Discussion board participation
- C. Student presentations
- D. Unit examinations (required)
- E. Laboratory reports (required)
- F. Case study completion (required)

Primary formats, modes, and methods for teaching and learning that may be used in the course:

- A. Lecture
- B. Small group work
- C. Online supplementation
- D. Laboratory
- E. Student-led discussions/presentations

VIII. Texts and Materials

The following types of course materials may be used:

- A. Textbooks
- B. Online lectures/podcasts
- C. Lab Manual
- D. Online resources

Sample of specific text that may be featured:

Essential Biology by Simon, Pearson Publishing (Most recent edition)
Principles of Biology: RVCC Laboratory Manual, bluedoor Publishing (Most recent edition)

IX. Resources

Students may need access to an internet connected device for completion of online assignments, viewing of video lectures, participation in online discussion. Students will utilize the microscope and laboratory equipment available in the RVCC Biology laboratory.

X. Honors Option

Not applicable.