Tompkins Cortland Community College

Master Course Syllabus

Course Discipline and Number: BIOL102 **Year: 2025-2026**

Course Title: Principles of Biology II **Credit Hours: 3**

I. Course Description: BIOL102 presents an overview of major biological principles. Major topics include evolution, biodiversity, animal form and function, and ecology. It is appropriate for students who are not planning to transfer to an upper level major in science, environmental science, or related field. This course will satisfy TC3 program requirements for a science, laboratory science, or unrestricted elective. Substantial outside preparation for lectures and laboratories is required. BIOL102 may be taken before BIOL101 (not a prerequisite). Prerequisites: Prior completion of, or concurrent enrollment in ENGL100 if required by placement. 3 Cr. (2 Lec., 2 Lab.) Fall and Spring semesters.

II. Additional Course Information:

1. The SUNY supported course management system (BrightSpace) is used to post the course syllabus, outline, course materials and related links. Including on-line quizzes, lab manual and discussion materials. Use of other on-line course management systems are encouraged.

III. Student Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Articulate the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of data analysis or mathematical modeling as assessed by lab reports and oral/poster presentations.
2. Apply the scientific method to relevant issues by completing an independent research project as assessed by projects or practicums.

IV. Tompkins Cortland Institutional Learning Outcomes; Program Learning Outcomes; SUNY General Education Competencies and Knowledge and Skills Areas

Tompkins Cortland ILOs

Complete this section for "service" courses only (e.g., courses that are required of all students; courses that are not program specific but satisfy liberal arts requirements; or commonly used in multiple academic programs to meet non-program-specific requirements). Check only Institutional Learning Outcomes (ILOs) that are meaningfully developed and assessed in this course. For each ILO chosen, include the SLO to which it aligns.

Students will:

☐ Communicate effectively, in oral and written forms, taking into consideration audience and purpose.

☒ Apply principles and methods of scientific inquiry and quantitative reasoning appropriate to their discipline.

1. an understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of data analysis or mathematical modeling as assessed by lab reports, oral presentation, poster presentations. 2. application of scientific data, concepts, and models in one of the natural (or physical) sciences as assessed by projects, practicums and/or solving case studies.

2. application of scientific data, concepts, and models in one of the natural (or physical) sciences as assessed by projects, practicums and/or solving case studies.

☐ Use information, critical thinking, and the creative process to solve problems and reach conclusions.

☐ Use technology appropriate to their discipline.

☐ Describe the ways in which social, economic, or environmental sustainability depends on their own and the collective contributions of a diversity of ideas and people.

Program Learning Outcomes

Students will develop an appreciation for and an understanding of the living world.

SUNY General Education Competencies

If this course assesses a SUNY GEN ED Competency, check all that apply and indicate which course outcome(s) address each checked item:

☐ CRITICAL THINKING & REASONING- Students will:

a. clearly articulate an issue or problem;
b. identify, analyze, and evaluate ideas, data, and arguments as they occur in their own or others' work; acknowledge limitations such as perspective and bias; and
c. develop well-reasoned (logical) arguments to form judgments and/or draw conclusions.

☐ INFORMATION LITERACY - Students will:

a. locate information effectively using tools appropriate to their need and discipline; evaluate information with an awareness of authority, validity, and bias; and demonstrate an understanding of the ethical dimensions of information use, creation, and dissemination.

☒ SUNY GENERAL EDUCATION KNOWLEDGE AND SKILLS AREA(s): Natural Sciences (and Scientific Reasoning)

For courses that are approved to meet one (or more) of the ten SUNY General Education Knowledge and Skills Areas, indicate which area the course fulfills, and which outcome(s) are aligned with the SUNY outcomes for that area:

SUNY SLO: Students will demonstrate scientific reasoning applied to the natural world, including

- an understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of data analysis or mathematical modeling

Course SLO(s):

1. Describe the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of data analysis or mathematical modeling as assessed by lab reports and oral/poster presentations..

SUNY SLO: Students will demonstrate scientific reasoning applied to the natural world, including

- application of scientific data, concepts, and models in one of the natural (or physical) sciences .

Course SLO(s):

2. Apply the scientific method to relevant issues, by completing an independent research project as assessed by projects or practicums.

☒ This course does not address any of the above Tompkins Cortland ILOs, PLOs, or SUNY General Education Competencies or Knowledge and Skills Areas.

V. Essential Topics/Themes

1. **How Populations Evolve**: Understanding natural selection as the major process by which evolution proceeds**.**
2. **The Origin of Species**: how a great deal of diversity among species evolved,
3. Tracing Evolutionary History: How can organisms be categorized according to their similarities and differences.
4. Microbial Life: Prokaryotes and Protists
5. The Evolution of Plant and Fungal Diversity
6. The Evolution of Invertebrate Diversity
7. The Evolution of Vertebrate Diversity
8. The Biosphere: An Introduction to Earth's Diverse Environments
9. Behavioral Adaptations to the Environment
10. **Population Ecology**
11. Communities and Ecosystems
12. **Conservation Biology** All organisms, including humans, are dependent on intricate and interdependent relationships with the physical environment for survival.
13. Scientific Method and Field Studies

VI. Methods of Assessment/Evaluation

Method	**% Course Grade**
1. Unit exams, covering several chapters; the last unit exam (or final) should be comprehensive and incorporate questions relating to all core concepts	30% - 40%
2. Short quizzes covering no more than two chapters.	15% - 25%
3. Written laboratory notebook/ independent research project presentation. 4. (Includes assessment material for SLO 1 and 2)	30% - 40%
5. Participation in class discussion/evaluation of outside resources.	10% - 25%

VII. Texts – ☐ Required ☒ Recommended ☒ Used for more than one course (list courses) BIOL101

High school instructors may consult with staff in the CollegeNow office for additional information and guidance.

	OER
Biology: Concepts and Connections (Benjamin Cummings Series in the Life Sciences) [or similar]. Campbell N. A, Mitchell, L.G. and J. B. Reece. Latest Edition, Benjamin Cummings Publishing.	☐

Biology 102 Laboratory Exercises (Pearson Custom Library or similar department approved manual).	☐

Editions listed are current as of date of syllabus. More recent editions may be used.

VIII. Bibliography of Supplemental Materials

1.

Editions listed are current as of date of syllabus. More recent editions may be used.

IX. Other Learning Resources

Audiovisual:

- **Electronic:** Access to publishers Mastering Biology and/or materials distributed with recommended text book for supplemental learning material.

Other:

Credit/Contact Hour Relationship*: The State University of New York, like most of American higher education, has adopted a variant of the traditional "Carnegie Unit" as a measure of academic credit. This unit is known in the State University by the familiar term, "semester credit hour," and is the primary academic measure by which progress toward a degree is gauged. In the interest of accurate academic measurement and cross campus comparability, the following definitions and practices apply in controlling the relationship between contact and credit hours. A semester credit hour is normally granted for satisfactory completion of one 50-minute session of classroom instruction per week for a semester of not less than fifteen weeks. This basic measure may be adjusted proportionately to reflect modified academic calendars and formats of study. Semester credit hours are granted for various types of instruction.(SUNY Memorandum to Presidents, Vol. 76 #8, 1976)*

Attendance Policy: *To maintain good grades, regular attendance in class is necessary. Absence from class is considered a serious matter and absence never excuses a student from class work. It is the responsibility of all instructors to distribute reasonable attendance policies in writing during the first week of class. Students are required to comply with the attendance policy set by each of their instructors. Students are not penalized if they are unable to attend classes or participate in exams on particular days because of religious beliefs, in accordance with Chapter 161, Section 224-a of the Education Law of the State of New York. Students who plan to be absent from classroom activity for religious reasons should discuss the absence in advance with their instructors. See college catalog for more information.*

Services for Students with Disabilities: *It is the College's policy to provide, on an individual basis, appropriate academic adjustments for students with disabilities, which may affect their ability to fully participate in program or course activities or to meet course requirements. Students with disabilities should contact the Coordinator of Access and Equity Services, to discuss their particular need for academic adjustments. All course materials are available in alternate formats upon request.*

Academic Integrity: *Every student at Tompkins Cortland Community College is expected to act in an academically honest fashion in all aspects of their academic work: in writing papers and reports, in taking examinations, in performing laboratory experiments and reporting the results, in clinical and cooperative learning experiences, and in attending to paperwork such as registration forms.*
Any written work submitted by a student must be their own. If the student uses the words or ideas of someone else, they must cite the source by such means as a footnote. Our guiding principle is that any honest evaluation of a student's performance must be based on that student's work. Any action taken by a student that would result in misrepresentation of someone else's work or actions as the student's own — such as cheating on a test, submitting

for credit a paper written by another person, or forging an advisor's signature — is intellectually dishonest and deserving of censure.

Several degree programs offer student learning opportunities (such as internships, field work, and clinical experiences) outside the standard classroom setting. As part of the learning process, students must understand and engage in conduct that adheres to principles guiding employment within the professional workplace. These behaviors include, but are not limited to, academic integrity, accountability, reliability, respect, use of appropriate language and dress, civility, professional ethics, honesty, and trustworthiness. Disciplinary action may be initiated for inappropriate conduct occurring while participating in any course-related project or event.