



BIOL 1408 - Biology for Non-Science Majors I

BIOL-1408L.001/.002 Lab Course Syllabus

Description

Provides a survey of biological principles with an emphasis on humans, including chemistry of life, cells, structure, function and reproduction. Laboratory activities will reinforce the above concepts. BIOL 1408 and BIOL1409 may be taken out of sequence.

Credits 4

Lecture Hours 3

Lab Hours 3

Extended Hours 0

Contact Hours 96

State Approval Code 26.0101.51 03

Instructor Name Brian Jones

Semester/Year Fall 2024

Meeting Time and Location

BIOL-1408.001 9:15am to 10:35am HNS 2308

BIOL-1408.002 10:45am to 12:05am HNS 2308

Alternate Operations During Campus Closure

In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Panola College to move to altered operations. During this time, Panola College may opt to continue delivery of instruction through methods that include, but are not limited to: online learning management system (CANVAS), online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor Panola College's website (www.panola.edu) for instructions about continuing courses remotely, CANVAS for each class for course-specific communication, and Panola College email for important general information.

Student Basic Needs

Unexpected circumstances may arise, but Panola College offers various resources to support students. If you need mental health services or are facing challenges with transportation, affording class materials and supplies, or accessing food regularly—issues that may impact your class performance—please visit panola.edu/resources.

Class Attendance

Regular and punctual attendance of classes and laboratories is required of all students. When a student has been ill or absent from class for approved extracurricular activities, he or she should be allowed, as far as possible, to make up for the missed work. If a student has not actively participated by the census date, they will be dropped by the instructor for non-attendance. This policy applies to courses that are in-person, online, hybrid, and hyflex.

Attendance in online courses is determined by submission of an assignment or participation in an activity. According to federal guidelines, simply logging into a distance learning course without participating in an academic assignment does not constitute attendance. Distance learning is defined as when a majority (more than 50%) of instruction occurs when the instructor and students are in separate physical locations. Students must engage in an academic activity prior to the course census date.

When an instructor feels that a student has been absent to such a degree as to invalidate the learning experience, the instructor may recommend to the Vice President of Instruction that the student be withdrawn from the course. Instructors may seek to withdraw students for non-attendance after they have accumulated the following number of absences:

Fall or spring semesters:

3 or more class meeting times per week - 5 absences

2 class meeting times per week - 3 absences

1 class meeting per week - 2 absences

The student is responsible for seeing that he or she has been officially withdrawn from a class. A student who stops attendance in a class without officially withdrawing from that class will be given a failing grade; consequently, the student must follow official withdrawal procedures in the Admissions/Records Office.

Please note: Health Science and Cosmetology courses may require more stringent attendance policies based on their accreditation agencies. Please see the addendum and/or program handbook for further information concerning attendance.

Pregnant/Parenting Policy

Panola College welcomes pregnant and parenting students as a part of the student body. This institution is committed to providing support and adaptations for a successful educational experience for pregnant and parenting students. Students experiencing a need for accommodations related to pregnancy or parenting will find a Pregnancy and Parenting Accommodations Request form in the Student Handbook or may request the form from the course instructor.

Artificial Intelligence (AI) Course Policy

No use of Generative AI permitted.

This option assumes that all work submitted by students will be generated by the students themselves, whether they are working individually or in groups. Students should not have another person or entity do the writing of any portion of an assignment, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Panola College's standards of academic integrity.

Student Learning Outcomes

Critical Thinking Skills – to include creative thinking, innovation, inquiry and analysis, evaluation and syntheses of information

- CT2: Gather and assess information relevant to a question
- CT3: Analyze, evaluate, and synthesize information

Communication Skills – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication

- CS3: Develop, interpret, and express ideas through visual communication

Empirical and Quantitative Skills – to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

- EQS2: Manipulate and analyze observable facts and arrive at an informed conclusion

Teamwork – to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

- TW1: Integrate different viewpoints as a member of a team
- TW2: Work with others to support and accomplish a shared goal

Instructional Goals and Purposes

The purposes of this course are to... to provide instruction in an atmosphere of mutual respect where students may develop their intellect and skills; to contribute to the development of students as responsible and informed members of society; to provide courses for students wishing to complete certificate programs, associate degree programs or wishing to transfer to a baccalaureate program.

Learning Outcomes

After studying all materials and resources presented in the course, the student will be able to:

1. Distinguish between prokaryotic, eukaryotic, plant and animal cells, and identify major cell structures.
2. Identify stages of the cell cycle, mitosis (plant and animal), and meiosis.
3. Interpret results from cell physiology experiments involving movement across membranes, enzymes, photosynthesis, and cellular respiration.
4. Apply genetic principles to predict the outcome of genetic crosses and statistically analyze results.
5. Describe karyotyping, pedigrees, and biotechnology and provide an example of the uses of each.
6. Identify parts of a DNA molecule, and describe replication, transcription, and translation.
7. Analyze evidence for evolution and natural selection.

Learning Outcomes for lab portion: (from ACGM)

After successfully studying all materials and resources presented in the course, the student will be able to:

1. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory
3. Communicate effectively the results of scientific investigations
4. Distinguish between prokaryotic, eukaryotic, plant and animal cells, and identify major cell structures.
5. Identify stages of the cell cycle, mitosis (plant and animal), and meiosis.
6. Interpret results from cell physiology experiments involving movement across membranes, enzymes, photosynthesis, and cellular respiration.
7. Apply genetic principles to predict the outcome of genetic crosses and statistically analyze results.
8. Identify the importance of karyotypes, pedigrees, and biotechnology.
9. Identify parts of a DNA molecule, and describe replication, transcription, and translation.
10. Analyze evidence for evolution and natural selection.

Specific Course Objectives (includes SCANS)

General Course Objectives:

1. To help students become better informed citizens by providing opportunities to learn the differences between science as a way of knowing and other disciplines such as art, philosophy and religion
2. To provide students an opportunity to understand and appreciate the complexity and relationships of living systems.
3. To help students become better informed regarding their own health and better informed as health services consumers by coming to a better understanding of the complexities of the human body
4. To make students aware of changing technologies in science and the responsibilities and ethical decisions that come with the use of various technologies.
5. To help students become better informed regarding environmental issues.
6. Gather and assess information relevant to a question.
7. Analyze, evaluate, and synthesize information.
8. Develop, interpret, and express ideas through written communication.
9. Manipulate and analyze observable facts and arrive at an informed conclusion.
10. Integrate different viewpoints as a member of a laboratory team.
11. Work with others to accomplish a shared goal.

Course Content

A general description of lecture/discussion topics included in this course are listed in the Learning Objectives section of this syllabus. Students in all sections of this course will learn the following content: Course content (see course description) will be taken from the adopted text and lab manual, scientific journals, current popular periodicals, appropriate online sources and pertinent reference literature.

Methods of Instruction/Course Format/Delivery

This course is offered in face-to-face format with frequent use of online resources. Both the lecture and lab portions of this course may include but not be limited to presentations by the instructor, videos, presentations by students, class discussions. While the lab portion of the class will be heavily hands-on with students expected to work individually and in teams, the lecture portion of the course may also include some "hands-on" active learning type activities. Some activities will demand that students come prepared to initiate and follow through on the activity independently with the instructor available for guidance and to answer questions.

Major Assignments/Assessments

The following items are assigned and assessed during the semester and used to calculate the student's final grade.

Assignments

1. The lecture portion may include but not be limited to objective and essay type written assignments, presentations by students, observation by the teacher of student participation and interaction, class discussions. Some of these activities may come from the required texts and online support as well as other ancillary online resources.
2. The lab portion may include but not be limited to objective and essay type items in lab reports, the gathering, presenting and analysis of data, the creation of experiments, presentations by students, observation by the teacher of student participation and interaction, class discussions. Some of these activities may come from the required texts and virtual labs.

Assessments

1. Lecture: Quizzes, Unit Tests, Observations
2. Lab: Observation of lab activities, lab reports, lab quizzes

Course Grade

The grading scale for this course is as follows:

40% from average of Unit Exams (5 or 6 exams)

20% from assignments

20% from the Laboratory Average

20% from the Final Exam (comprehensive over all but the last unit)

Texts Materials, and Supplies

- Text: Campbell Biology Concepts and Connections 10th Edition; Martha R. Taylor; et al; 2021; Pearson (E-Text available only, comes with Modified Mastering Biology in Panola Store) ISBN# 9780136538820
- Lab Manual: Exploring Biology in the Laboratory Core Concepts, 2e; Pendarvis & Crawley; 2018; Morton Publishing (Lab book only required for face to face labs) ISBN# 978-161731-9006
- Lab Kit: (For online lab only) Purchased only through Panola Store.

Required supplements:

- Access Code to Modified Mastering Biology
- Access to Khan Academy (free)
- Access to Howard Hughes Medical Institute BioInteractive and other ancillaries (free)
- Access to other free online resources as necessary

Required Readings

May include but not be limited to news publications, professional journals, agency publications.

Recommended Readings

May include but not be limited to news publications, professional journals, agency publications.

Addendum

Other

- Courses conducted via video conferencing may be recorded and shared for instructional purposes by the instructor.
- For current texts and materials, use the following link to access bookstore listings: <https://www.panolacollegestore.com>.
- For testing services, use the following link: <https://www.panola.edu/student-services/studentsupport/academic-testing-center>.
- If any student in this class has special classroom or testing needs because of a physical learning or emotional condition, please contact the ADA Student Coordinator in Support Services located in the Charles C. Matthews Student Center or go to <https://www.panola.edu/studentservices/student-support/disability-support-services> for more information.
- Withdrawing from a course is the student's responsibility. Students who do not attend class and who do not withdraw will receive the grade earned for the course.
- Student Handbook: <https://www.panola.edu/> (located on at the bottom under student)

SCANS Criteria

1. Foundation skills are defined in three areas: basic skills, thinking skills, and personal qualities.
 - a. Basic Skills: A worker must read, write, perform arithmetic and mathematical operations, listen, and speak effectively. These skills include:
 - i. Reading: locate, understand, and interpret written information in prose and in documents such as manuals, graphs, and schedules.
 - ii. Writing: communicate thoughts, ideas, information, and messages in writing, and create documents such as letters, directions, manuals, reports, graphs, and flow charts.
 - iii. Arithmetic and Mathematical Operations: perform basic computations and approach practical problems by choosing appropriately from a variety of mathematical techniques.
 - iv. Listening: receive, attend to, interpret, and respond to verbal messages and other cues.
 - v. Speaking: Organize ideas and communicate orally.
 - b. Thinking Skills: A worker must think creatively, make decisions, solve problems, visualize, know how to learn, and reason effectively. These skills include:
 - i. Creative Thinking: generate new ideas.
 - ii. Decision Making: specify goals and constraints, generate alternatives, consider risks, and evaluate and choose the best alternative.
 - iii. Problem Solving: recognize problems and devise and implement plan of action.
 - iv. Visualize ("Seeing Things in the Mind's Eye"): organize and process symbols, pictures, graphs, objects, and other information.
 - v. Knowing How to Learn: use efficient learning techniques to acquire and apply new knowledge and skills.
 - vi. Reasoning: discover a rule or principle underlying the relationship between two or more objects and apply it when solving a problem.
 - c. Personal Qualities: A worker must display responsibility, self-esteem, sociability, self management, integrity, and honesty.
 - i. Responsibility: exert a high level of effort and persevere toward goal attainment.
 - ii. Self-Esteem: believe in one's own self-worth and maintain a positive view of oneself.
 - iii. Sociability: demonstrate understanding, friendliness, adaptability, empathy, and politeness in group settings.
 - iv. Self-Management: assess oneself accurately, set personal goals, monitor progress, and exhibit self-control.
 - v. Integrity and Honesty: choose ethical courses of action.
2. Workplace competencies are defined in five areas: resources, interpersonal skills, information, systems, and technology.
 - a. Resources: A worker must identify, organize, plan, and allocate resources effectively.
 - i. Time: select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
 - ii. Money: Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.

- iii. **Material and Facilities:** Acquire, store, allocate, and use materials or space efficiently. Examples: construct a decision timeline chart; use computer software to plan a project; prepare a budget; conduct a cost/benefits analysis; design an RFP process; write a job description; develop a staffing plan.
 - b. **Interpersonal Skills:** A worker must work with others effectively.
 - i. **Participate as a Member of a Team:** contribute to group effort.
 - ii. **Teach Others New Skills.**
 - iii. **Serve Clients/Customers:** work to satisfy customer's expectations.
 - iv. **Exercise Leadership:** communicate ideas to justify position, persuade and convince others, responsibly challenge existing procedures and policies.
 - v. **Negotiate:** work toward agreements involving exchange of resources, resolve divergent interests.
 - vi. **Work with Diversity:** work well with men and women from diverse backgrounds. Examples: collaborate with a group member to solve a problem; work through a group conflict situation, train a colleague; deal with a dissatisfied customer in person; select and use appropriate leadership styles; use effective delegation techniques; conduct an individual or team negotiation; demonstrate an understanding of how people from different cultural backgrounds might behave in various situations.
 - c. **Information:** A worker must be able to acquire and use information.
 - i. **Acquire and Evaluate Information.**
 - ii. **Organize and Maintain Information.**
 - iii. **Interpret and Communicate Information.**
 - iv. **Use Computers to Process Information.** Examples: research and collect data from various sources; develop a form to collect data; develop an inventory record-keeping system; produce a report using graphics; make an oral presentation using various media; use on-line computer databases to research a report; use a computer spreadsheet to develop a budget.
 - d. **Systems:** A worker must understand complex interrelationships.
 - i. **Understand Systems:** know how social, organizational, and technological systems work and operate effectively with them.
 - ii. **Monitor and Correct Performance:** distinguish trends, predict impacts on system operations, diagnose deviations in systems' performance and correct malfunctions.
 - iii. **Improve or Design Systems:** suggest modifications to existing systems and develop new or alternative systems to improve performance. Examples: draw and interpret an organizational chart; develop a monitoring process; choose a situation needing improvement, break it down, examine it, propose an improvement, and implement it.
 - e. **Technology:** A worker must be able to work with a variety of technologies.
 - i. **Select Technology:** choose procedures, tools or equipment including computers and related technologies.
 - ii. **Apply Technologies to Task:** understand overall intent and proper procedures for setup and operation of equipment.
 - iii. **Maintain and Troubleshoot Equipment:** Prevent, identify, or solve problems with equipment, including computers and other technologies. Examples: read equipment descriptions and technical specifications to select equipment to meet needs; set up and assemble appropriate equipment from instructions; read and follow directions for troubleshooting and repairing equipment.