Syllabus: Bio 100N-2: Biology Concepts

Course Information

Course Title: Biology Concepts
Room: JM 01
Course Prefix/Number: Bio 100N-2
Semester: Fall 2025
Class Days/Times: M/W 2:00-4:30
Credit Hours: 4
Zoom Link: https://us06web.zoom.us/j/89892594537

Instructor Information

Name: Emily Lucas
E-mail: elucas@tocc.edu
Office location:
Office hours: Wed 12:00-1:00pm, Tues/Thurs 10:00am-12:00pm or by appointment

Course Description

Basic principles and concepts of biology. Includes methods of scientific inquiry, cell structure, chemistry, metabolism, reproduction, genetics, molecular biology, evolution, ecology, and current issues in biology. Lecture and lab are taught simultaneously.

Student Learning Outcomes

After completion of the course students will be able to:

1. Perform activities to demonstrate improvement in the general education goals of communication, critical thinking and mathematics.
2. Describe characteristics of living organisms that distinguish them from non-living constituents of the biosphere.
3. Utilize scientific methods to formulate and answer questions and discuss its strengths and limitations.
4. Describe and explain the properties and roles of biologically important molecules, including proteins, carbohydrates, lipids, and nucleic acids.
5. Describe the structure and function of cells and cellular components in single and multicellular organisms.
6. Describe how energy is acquired and used by living organisms.
7. Describe how traits are inherited and apply patterns of inheritance.
8. Explain the molecular biology of genes and their expression.
9. Describe potential impacts of genetic technologies on society.
10. Explain possible origins of life on Earth and mechanism(s) of evolution that help us account for the amazing diversity of life we now find on our planet.
11. Explain how the flow of energy through an ecosystem influences its structure.
12. Describe how organisms interact with each other and their environment.
13. Apply biological and ecological principles to discuss current issues in human health, and human impact on the environment.

Course Outline

1. The Nature and Science of Biology
    a. Characteristics of Living Things
    b. Scientific Processes
2. The Chemical and Cellular Basis of Life
    a. Fundamental chemistry
    b. Cellular Structure and Function
    c. Energy Pathways
3. Principles of Inheritance
    a. Cellular Life Cycles
    b. Patterns of Inheritance
4. Molecular Biology
    a. DNA Structure and Function
    b. Genetic Technologies and Society
5. Evolution and Diversity of Life
    a. Principles of Evolution
    b. Diversity of Life
    c. Organismal Structure and Function 6. Principles of Ecology
7. Current Issues in Biology

Course Structure

Students are expected to complete reading assignments, quizzes, discussions, and lab activities. Students cannot pass this course without completing the majority of assignments. In addition, three exams will be given at the conclusion of 3 broad topics, in addition to a final project. This course is organized with weekly modules. You can expect to see or submit the items below during the week. Changes to the dates will be announced in the Canvas "Announcements".

Every week:
- Weekly modules available Monday by 11:59 PM MST.
- Assignments due Monday by 11:59 PM MST.

Some weeks:
- Discussion posts have two deadlines: Mondays (Initial post) and Wednesdays (2 replies to classmates) (11:59 PM MST)
- Laboratory assignments due Fridays (11:59 p.m.)

Course Learning Materials and Textbook Information

The textbook for this class is available online for free. There are alternative free and paid options. All formats can be reached at the web addresses below or in the "helpful resources" module in Canvas.
Fowler, S., Roush, R., & Wise, J. (2013). Concepts of biology. OpenStax, Rice University. Print ISBN 1938168119. www.openstax.org/details/concepts-biology

Any additional readings will be posted to Canvas.

Accountability: (defines grade expectations and accountability for coursework; emphasizes students' responsibility for original work and proper citation; stresses punctuality, participation, and consequences of absences)

Evaluations and Grading & Assignments:

90 and above is an A
80 - 89 is a B
70 - 79 is a C
60 - 69 is a D
Under 60 is Failing

Your grade will be determined by the following:

Evaluation	# of Assignments	Points Per Assignment	Total Pts	% of Grade
Participation			50	10%
Quizzes	10	10	100	20%
Labs	10	10	100	20%
Exams	3	50	150	30%
Final Project	1	100	100	20%
Total			500	**100%**

Participation (10%)

Participation will be a small percentage of your grade, because everyone here has different insights that can be valuable to the overall learning process. In my classroom, questions are encouraged, as are your thoughts on both course material and your classmates' commentary. If you find yourself struggling to engage, please reach out and we can discuss how to help you do so. Ways to engage include:

- Asking questions
- Commenting on/adding to a previous comment
- Disagreeing, respectfully, with a previous comment
- Reflecting on your own position/perspective in an argument or within the culture
- Discussing another perspective on the topic at hand
- Ultimately, you should ask yourself, "How have I added to the quality of this course through my presence? How did I contribute insights?"

Quizzes (20%)

Labs (20%)

Exams (30%)

Final Project (20%)
Topic and rubric TBD

Policies and Expectations

Attendance: Attendance is required for this class. You're here to learn, and being present is the best way to do that! However, I also understand that sickness/personal matters/cultural events/life can arise. Please send me an email as soon as possible letting me know if you are unable to attend class. Sharing the reason for your absence is useful (help me help you!) but not mandatory. It is your responsibility to make up missed course material, but I am happy to work with you to do so.

Late Assignments: Please reach out to me (as far ahead of time as is possible) if you think you are going to be late turning in an assignment. I am very understanding about late work as long as you communicate with me. I want you all to do well and enjoy learning, so let's work together to make that possible.

Cite Your Sources: Please properly cite your sources! At the beginning of the course, we will go over how to do so. I do not have a particular format (APA, MLA, etc.) that I require, but sources need to be cited or it is considered plagiarism

Cell Phone Policy: Please keep cell phones/other electronic devices silenced and placed away. If you think you might need to use your cell phone during class for personal emergencies (or everyday needs like childcare), please send me an email ahead of time.

AI/ChatGPT: I am firmly against the use of ChatGPT/AI in an academic setting. Again, you are here to gain the skills and knowledge to help you move ahead in your professional and educational lives, including problem-solving, critical thinking, and research abilities. Relying on ChatGPT is antithetical to all the above. Additionally, it's bad for the very environment you're here to learn about (https://earth.org/environmental-impact-chatgpt/). For these reasons, I ask that students not use AI/ChatGPT for my course. I would rather you come to me with half-formed ideas and have us work on them together to foster intellectual growth. However, at the end of the day, your integrity and your willingness to learn are your own.

Attendance Policy
You are expected to arrive to class on time and be prepared to participate in each class period. Four unexcused absences may result in withdrawal and a "W" or "Y" will be recorded. You may request to be excused from class for religious observances and practices, for illness, for school or work-related travel or for personal or family emergencies. If you will be absent, please notify the instructor as soon as possible.

Academic Integrity:
Violations of scholastic ethics are considered serious offenses by San Carlos Apache College. Students may consult the SCAC Student Handbook sections on student code of conduct, on scholastic ethics and on the grade appeal procedure.

All work done for this class must be your own, or the original work of your group. While you may discuss assignments with other class members, the final written project must clearly be original. You may use work from books and other materials if it is properly cited.

Instructor Withdrawals
Students who have missed four consecutive classes (or the equivalent), or have not submitted any assignments nor taken any quizzes by the 45th day census report, due on [date of 45th day found in Academic Calendar on SCAC website], are assumed NOT to be participating in the class and may be withdrawn at the faculty member's discretion.

Student Withdrawals
Students may withdraw from class at any time during the first 2/3 of the semester without instructor permission and without incurring any grade penalty. Please be sure to withdraw yourself by [withdrawal deadline date found in Academic
Calendar on SCAC website] if you do not expect to complete the class; otherwise, you may receive an "F" grade.

RESPECT (Establishes a respectful learning environment free from discrimination; promotes a safe and inclusive campus).

Equal Access Statement/Disability Accommodations
San Carlos Apache College seeks to provide reasonable accommodations for qualified individuals with disabilities. The College will comply with all applicable regulations, and guidelines with respect to providing reasonable accommodations as required to ensure an equal educational opportunity. This process includes self-identifying as a student with a disability, providing supporting documentation of their disability, and being approved for services through the Disability Resources Office (DRO). It is the student's responsibility to make known to their instructor(s) the student's specific needs within the context of each class in order to receive appropriate accommodations. We will work together in order to develop an accommodation plan specifically designed to meet the individual student's requirements.

For more information or to request academic accommodations, please contact: Anthony Osborn, TOCC Disabilities Resource Coordinator, aosborn@tocc.edu, or 520-383-0033 for additional information and assistance.

Title IX
San Carlos Apache College encourages each student to have the knowledge and skills to be an active bystander who intervenes when anyone is observed or being harassed or endangered by sexual violence. Sexual discrimination and sexual violence can undermine students' academic success and quality of life on campus and beyond. We encourage students who have experienced or witnessed any form of sexual misconduct to talk about their experience and seek the support they need.

Conduct: Bias, Bullying, Discrimination and Harassment

San Carlos Apache College faculty and staff are dedicated to creating a safe and supportive campus environment as a core value. Harassment based on age, class, color, culture, disability and ability, ethnicity, gender, gender identity and expression, immigration status, marital status, political ideology, race, religion/spirituality, sex, sexual orientation, and tribal sovereign status will not be tolerated.

RESILIENCE (Supports students facing unavoidable circumstances and recognizes hardships, while setting academic expectations).

Incomplete Policy

Incomplete (I) grades are not awarded automatically. The student must request an "I" from the instructor who can choose to award an Incomplete only if all three of the following conditions are met:

1. The student must be in in compliance with the attendance policy.
2. The student must have unavoidable circumstance that would prohibit the student from completing the course.
3. The student must have completed over 75% of the course requirements with at least a “C” grade.

Incompletes are not a substitute for incomplete work due to frequent absences or poor academic performance. Incomplete grades that are not made up by the end of the ninth week of the following semester will be automatically changed to an F if the agreed upon work, as stipulated on the written form signed by the instructor and the student when the I grade is awarded, is not completed.

Special Withdrawals (Y) Grade

The “Y” grade is an administrative withdrawal given at the instructor’s option when no other grade is deemed appropriate. Your instructor must file a form stating the specific rationale, with documentation, for awarding this grade. “Y” grades are discouraged since they often affect students negatively. Your instructor will not award a "Y" grade without a strong reason.

OPENNESS (Encourages open discussions between students and faculty and provides transparency about expectations and learning methods)

Course Schedule

This schedule is designed to evolve and change throughout the semester based on class progress and interests. You will be notified of any changes as they occur.

Key:
W_A = Week _ Assignment

W_D = Week _ Discussion
W_L = Week _ Laboratory
M = Monday
T = Tuesday
W = Wednesday
R = Thursday
F = Friday

Week	**Important Dates**	**Topic**	**Chapter/Section**	**Assignments**
1 8/18- 8/22	8/18: First day of classes	The Scientific Method	Ch. 1: 1.2	W1A; W1D
2 8/25- 8/30	8/25: My birthday	Introduction to Biology	Ch. 1: 1.1	W2A; W2D
3 9/01- 9/05	9/01: Labor Day, no class	Chemical Foundation of life	Ch. 2: 2.1-2.2	W3A: W3L
4 9/08- 9/12		Biological Macromolecules	Ch. 2: 2.3	W4A; W4L
5 9/15- 9/19		Cell Structures and Functions	Ch. 3: 3.1-3.3	W5A; W5D; Exam 1
6 9/22- 9/26		Cell Energy and Photosynthesis	Ch. 4: 4.1-4.2	W6A; W6D
7 9/29- 10/03	FALL BREAK			
8 10/06- 10/10		Metabolism and energy flow	Ch. 5: 5.1 Ch. 20: 20.1	W7A; W7L

9 10/13- 10/17		Cell reproduction & mitosis Introduce final project	Ch. 6: 6.1-6.4	W8A; W8L
10 10/20- 10/24		Meiosis & sexual reproduction	Ch 7: 7.1-7.3	W9A; W9D Exam 2
11 10/27- 10/31		Patterns of inheritance	Ch. 8: 8.1-8.3	W10A; W10L
12 11/03- 11/07		Molecular biology and biotechnology	Ch 9: 9.1-9.4	W11A; W11L
13 11/10- 11/14	11/11: Veterans Day, no class	Evolution	Ch. 10: 10.1- 10.3	W12A; W12D
14 11/17- 11/21		Ecology	Ch. 11: 11.1-11.3	W13A; W13L
15 11/24- 11/28	11/27 and 11/28: no class	Biodiversity and conservation	Ch. 19: 19.1 Ch. 21: 21.1-21.3	W14A; W14D; Exam 3
16 12/01- 12/05			Final Project	
12/12/25	Final grades due			

Faculty/Student Communication

A faculty member will respond to a student's communication within 24 hours of receiving the communication excluding weekends and college closures. If a course is online a faculty will login their Canvas classroom a minimum of three times per week spread evenly throughout the week and respond to any discussion posts and check on student progress in the course.

Course Feedback:
All assignments will be graded and returned to the students promptly, typically within a week after the assignment is closed for handing in. Email and phone messages will be returned within 24 hours. A student or the instructor may request a student conference at any time during the semester. Quarterly grade reports will be provided to each student, either in person, by email or via the electronic system of Canvas.

WISDOM (Encourages evaluation, reasoning and diverse perspectives; emphasizes organized and audience-aware expression, and promotes learning from elders and cultural teachings for personal and academic growth)

SCAC General Education Learning Outcomes

Apache Wisdom
Learning from the teachings carried on from Apache elders and other community leaders, students will appreciate their unique history, language, and culture as a source of strength for their personal, family, academic, and career aspirations.

Critical Thinking
Approach critical issues, problems, or questions using creativity and deductive reasoning, evaluating evidence, acknowledging diverse perspectives and contexts, and synthesizing one's own viewpoint into ongoing conversations and debates.

Communication
Effectively express ideas orally and in writing. Good communication includes understanding one's audience, organizing one's thoughts, acknowledging and integrating outside sources, using the most recent technology, and following the accepted writing and citation conventions of the particular discipline.

Environmental Literacy
Students will understand their connection to social, cultural, physical, and global environments. Students will consider and evaluate strategies for cultural, community and global sustainability.

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