

Syllabus

BIOL 220

Life Science for Teachers

Carolina Core SCI

fall 2022

Section 01 Tuesday/Thursday 8:30-9:45 Lab Tuesdays: 10:05-11:20

Section 02 Tuesday/Thursday 11:40-12:55 Lab Thursdays: 10:05-11:20

Coker Life Science Room 209

Gayle Hinton

Office hours:

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by appointment

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(Call/text to arrange)

Phone: 803-730-2913 (cell/text) preferred

I. Descriptive Information

1. **Course Number and Title:** BIOL 220

Course Credit: 4 semester hours (undergraduate)

1. **Prerequisites:** None

2. **Intended Audience:** Designed for undergraduates seeking elementary teacher certification. This course will ensure that elementary education majors will understand the fundamental concepts of credit.

Full Course Description: BIOL 220 is designed to provide B.A. Education majors with an understanding of the life science concepts found in the South Carolina elementary science education standards (science standards). Throughout the course participants will explore content appropriate for grades K-8 science classrooms. Students will explore various environmental issues and engage in related activities that are explicitly connected to the K-8 science standards. The activities will feature instructional strategies and resources suggested by the Science Education faculty within the College of Education. The content knowledge acquired should form the basis for life science teaching and learning in an elementary classroom.

II. Learning Outcomes

- Students will apply the use of fundamental concepts in the life sciences through lectures, hands on experiments, readings, collaboration, and projects.
- Students will experiment with the scientific method by applying it in class labs.
- Students will utilize life science content for planning, delivering, and managing hands-on/minds-on science instruction with an emphasis on meeting the needs of diverse student populations.
- Students will compose a journal that highlights observations, inferences and conclusions derived from class experiences and labs. This journal is referred to as an OIC journal.
- Students will dissect and respond to naïve theories and misconceptions that most children have about scientific and technological phenomenon in class discussions and reflections.
- Students will identify relevant connections between science and the real world as demonstrated through three projects, "It's All Connected", "Human Body Collaborative Project" and the "Invasive Species" classroom assignments and labs.
- Students will model best practices for teaching life science to students in grades kindergarten through 8th grade as demonstrated through alignment of assignments to the SC Science Academic Standards.

III. Course Materials:

1. [Elevate Science](#) Life Science Edition Savvas Publishing (formally Pearson) ISBN-13: 978-0328948574 ISBN-10: 0328948578
2. Copy of the [SC Academic Standards for Science](#) found at www.ed.sc.gov
3. Selected readings distributed via course Blackboard site.
4. Recommended (not required) Resources/Texts: Student Membership in the *National Science Teachers Association* (Cost \$35)

IV. Modes of Instruction

1. Direct Instruction
2. Guided Inquiry
3. Five E Learning Cycle
4. Lecture
5. Cooperative Grouping
6. Laboratory Activities

7. Computer/Technological Presentations
8. Small Group Activities (may be limited due to COVID protocols)

V. Academic Course Requirements:

Pre-assessment: Students will individually complete an **ungraded** elementary science content exam. The exam covers science content appropriate for a K-8 curriculum. While the exam is not graded for "correctness", students must provide an explanation/reasoning for each question response to earn full credit. This assignment will be worth a **total of 5 possible points**.

OIC Book: Science Journal: A science journal called an OIC Book, will be used to document your evolving understanding of scientific inquiry as well as your developing beliefs related to science concepts. Journals are expected to have detailed observations, drawings, diagrams, notes, etc. which will demonstrate student thinking during engagement in various science activities and labs completed during class. This assignment will be worth a **total of 15 possible points**.

Participation in class and lab/Professional Learning Community Contribution: To earn full credit students should display practices that facilitate a positive and productive learning experience for all). Students should participate in chats and class discussions and assignments.

Course Quizzes: During the semester 3 quizzes will be completed. These quizzes focus on science concepts and processes addressed in class readings and discussions. Each quiz will be worth **10 points each** for a **total of 30 possible points**.

It's All Connected Presentations: Students will research a current issue in Biology, create an original presentation that summarizes key aspects of the issue, how it is connected to other living things and present their work during a PowerPoint Presentation. The "It's All Connected" assignment will be worth **5 possible points**.

Human Body Study: Students will complete a study of a human body system, complete online assignments and present with a group to the class. **10 possible points**.

Invasive Species Problem Based Learning (PBL) Exploration: Students will complete a problem-based investigation. This assignment is worth **10 possible points**.

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Final Exam: This exam will focus on science concepts addressed in the entire course, textbook and class discussions. The **exam will be worth 15 possible points**

Pre-Assessment correction Role playing as a teacher, the student will correct their pre-assessment from the first day of class

Total points: 100

VI. Course Policies and Procedures

Attendance and Classroom Expectations

1. Professional behavior/manner is expected during all class activities consistent with the College of Education Conceptual Framework (http://www.ed.sc.edu/pdf_files/CF%20Handout.pdf).
2. Students are expected to attend all scheduled class meetings. **The university policy regarding attendance will be strictly enforced.** This policy states that absence from 10% of class meeting
3. *In the case of absence from class* **students should communicate directly with the professor.** It is the student's responsibility to communicate in a timely and professional manner.
4. Assignments will be accepted **only on or before** the specified due date unless previous arrangements were made with instructor.
5. Use of cell phones is prohibited and must be muted, unless you have the instructor's consent
6. Instruction will be lecture, discussions, collaboration, lab work, and written assignments and projects. All lecture and lab PowerPoints will be available on Blackboard following class.
7. Expectations of Instructor
8. Copyright. Fair use
9. Interpersonal violence statement

Accommodating Disabilities

Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, contact the **Student Disability Resource Center: 777-6142, TDD 777-6744, email sadrc@mailbox.sc.edu**, or stop by Close-Hipp Suite 102. All accommodations must be approved through the Student Disability Resource Center.

VII Technology Requirements

The PowerPoint lecture presentations, links to articles, assignments, quizzes, and rubrics are located on the Blackboard site for the course. To participate in learning activities and complete assignments, you will need:

- Access to a working computer that has a current operating system with updates installed, plus speakers or headphones to hear lecture presentations (transcripts provided);
- Reliable Internet access and a USC email account.
- A current Internet browser that is compatible with Blackboard (Google Chrome is the recommended browser for Blackboard);
- Microsoft Word as your word processing program; and
- Reliable data storage for your work, such as a USB drive or Office365 OneDrive cloud storage.

Minimum Technical Skills Needed

Minimum technical skills are needed in this course. All work in this course must be completed and submitted online through Blackboard. Therefore, you must have consistent and reliable access to a computer and the Internet. The minimum technical skills you have include the ability to:

- Organize and save electronic files.
- Use USC email and attached files.
- Check email and Blackboard daily.
- Download and upload documents.
- Locate information with a browser; and
- Use Blackboard.

IX Evaluation and Grading Scale

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<p>Course Quizzes: During the semester 3 quizzes will be completed. These quizzes focus on science concepts and processes addressed in class readings and discussions. Each quiz will be worth 10 points each for a total of 30 possible points.</p>	10
	10
	10
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<p>Human Body Study Students will complete a study of a human body system, complete online assignments and present with a group to the class. 10 possible points.</p>	10

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Final Exam: This exam will focus on science concepts addressed in the entire course, textbook and class discussions. The exam will be worth 15 possible points	15
Pre-Assessment correction Role playing as a teacher, the student will correct their pre-assessment from the first day of class.	5
Total points	100

Evaluation and Grading

Evaluation of student performance will be based on the following grading scale:

A	93-100
B+	88-92
B	84- 87
C+	80-83
C	75-79
D	70-74

X. Course Outline. Schedule:

NOTE: E-text page numbers are in <i>italics</i>		
Date	Topics	Assigned Readings
Aug 18	Course Overview Thinking like a scientist Pre-assessment	Textbook 478-485 <i>Scientific Knowledge, tools of science, and The engineering Process OP</i>
Aug 23	Scientific Method and Science Ethics Properties of water	Textbook p 474-477/ 4-12 Pellagra video https://www.youtube.com/watch?v=ZB_Yg9rrmSE
Aug 25	Characteristics of Living Things It's All Connected Project	Textbook 4-12 and 474-477 <i>Topic 1. Lesson 1 The meaning of science and science processes OP</i>
LAB 1 Lab safety/ Thinking Like a Scientist station		
Aug 30	Cells and cell functions	Textbook 62-67 and 72-80 and 98-114 <i>Topic 2 Lesson 1, Lesson 2 and Lesson 5</i>
Sept 1	Cycles: Photosynthesis /Respiration/Carbon	Textbook: 16-25 and 68-69 <i>Topic 1 Lesson 2 until end of check</i> <i>Topic 2 Lesson 1</i>

LAB 2: Photosynthesis /Respiration / Nitrogen cycle		
Sept 6	Scientific classification-Dichotomous key/ Review	Textbook 16-21
Sept 8	Quiz 1 Introduction to Microscopes	Textbook 488-489 microscopes <i>Appendix C Using a Microscope</i>
LAB 3 Dichotomous key- Cerealites and Microscope activity		
Sept 13	It's All Connected Presentation	Textbook: 354-355 and 370-380 <i>Topic 7 Lesson 1,3, and 4</i> <i>Topic 7 Making a Punnett Square</i>
Sept 15	DNA Inheritance Punnett squares Genetics	
LAB 4 Alien Genetics/ Monohybrid Mice! Bacteria		
Sept 20	Virus and Bacteria	Textbook 26-32 Textbook page 69 <i>Topic 1 Lesson 3 Bacteria</i>
Sept 22	Protists	Textbook 33 <i>Topic 1 Lesson 3 Protists</i>
LAB 5 Fungi and Protists activity stations		
Sept 27	Fungi	Textbook 34-35 <i>(Topic 1 Lesson 3 Fungi til check</i>
Sept 29	Plant Structures/reproduction	Textbook 38-43 <i>Topic 1 Lesson 4</i>
LAB 6 Flower and seed dissection		
Oct 4	Plant processes and adaptations	Textbook 209-217 230-232 <i>Topic 4 Lesson 2 and 4</i>
Oct 6	Review and Quiz 2	Textbook 209-217 <i>see above</i>
Oct 11	Animals/	OIC Book check up
Lab 7 Earthworm, crayfish, and octopus Exploration		
Oct 18	Invertebrates	Textbook 228-232 <i>(Topic 4 Lesson 4</i>
Oct 20	Arthropods	textbook 44-48 <i>Topic 1 Lesson 4</i> "Counting Mealworms"
LAB 8 Mealworm and Vertebrate labs		
Oct 25	Animal Vertebrates: Ectotherms	Textbook 44-48

		Topic 1 Lesson 4
Oct 27	Vertebrates: Endotherms	Textbook 45-48 Topic 1 Lesson 4 Invertebrates
LAB 9 Human body project collaborative work time		
Nov 1	Quiz 3 / Intro Body Project	
Nov 3	Energy flow/ Invasive species	Textbook 248-258 Topic 5un til Lesson 1 check
LAB 10 Energy pyramid and Owl pellet		
Nov 8	Body Collaborative presentation	
Nov 10	Biomes Ecosystems Populations, Communities Invasive species	Textbook 295-299 Topic 6 Lesson 1
LAB 11 Animal adaptations and Biomes		
Nov 15	Adaptations, Limiting Factors,	Textbook 262-271 Topic 5 Lesson 2
Nov 17	Human Impact/Fossil	Textbook 294-302 Topic 6 Lesson 1 until check
LAB 12 Biodiversity Explorations and Important pages-		
Nov 22	Biodiversity /Evolution	OIC returned https://www.youtube.com/watch?v=XlRhCRfkn1c
Nov 29	Invasive Project presentations EXAM Review Important Page	Textbook 305-322 Topic 6 Lesson 2 Succession until Lesson 3
Dec 1	Last class Review	

Academic Integrity

Honor Code

Every student has a role in maintaining the academic reputation of the university. It is imperative that you refrain from engaging in plagiarism, cheating, falsifying your work and/or assisting other students in violating the Honor Code.

Two important components of the Honor Code:

- Faculty members are required to report potential violations of the Honor Code to the Office of Student Conduct and Academic Integrity.
- When a student is uncertain as to whether conduct would violate the Honor Code, it is their responsibility to seek clarification from the appropriate faculty member.

To clarify your understanding of the Honor Code, use these resources:

- [Academic Integrity Tutorial \(video\)](#)
- Instructor's office hours
- [The Purdue Online Writing Lab](#)
- [Student Success Center](#)
- [The Writing Center](#)
- [University Libraries: Citation Basics](#)

Your enrollment in this class signifies your willingness to accept these responsibilities and uphold the Honor Code of the University of South Carolina. Please review the [Honor Code Policies](#). Any deviation from this expectation can result in a (insert academic penalty here) and a referral to the Office of Student Conduct and Academic Integrity.

Carolinian Creed

The community of scholars at the University of South Carolina is dedicated to personal and academic excellence. Choosing to join the community obligates each member to the Carolinian Creed. Academic and civil discourse are the cornerstones of the educational system and crucial to individual growth.

As a Carolinian:

- I will practice personal and academic integrity;
- I will respect the rights and dignity of all persons;
- I will respect the rights and property of others;
- I will discourage bigotry, while striving to learn from differences in people, ideas and opinions;
- I will demonstrate concern for others, their feelings and their need for conditions which support their work and development.

Copyright Syllabus Language

Lectures and course materials (which is inclusive of my presentations, tests, exams, outlines, and lecture notes) maybe protected by copyright. You are encouraged to take notes and utilize course materials for your own educational purpose. However, you are not to reproduce or distribute this content without my expressed written permission. This includes sharing course materials to online social study sites like CourseHero and other services. Students who publicly reproduce, distribute or modify course content maybe in violation of the university's Honor Code's Complicity policy, which states: sharing academic work with another student (either in person or electronically) without the permission of the instructor.

To best understand the parameters around copyright and intellectual property review [ACAF 1.33 "Intellectual Property Policy"](#).

Collaboration

A student's grades are to represent to what extent that individual student has mastered the course content. You should assume that you are to complete course work individually (without the use of another person or un-cited outside source) unless otherwise indicated by the instructor. It is your responsibility to seek clarification if you are unclear about what constitutes proper or improper collaboration.

Lab Assignments

In this course students will complete lab assignments with a partner. You are encouraged to work together to complete the data collection. However, all lab reports must be the work of the individual student and may not be copied from another student's work, the text or any other source. Any discussion with your lab partner should be limited to general terms and big picture concepts. Avoid sharing your lab report with other students electronically.

Reusing Course Materials

- The use of previous semester course materials is not allowed in this course. This applies to homework, projects, quizzes and tests. Because these aids are not available to all students within the c undermines the fundamental principles of fairness and disrupts your professor's ability to accurately evaluate your work. Any potential violations will be forwarded to the Office of Student Conduct :
- The use of previous semester course materials is allowed in this course. Keep in mind that they may serve as helpful teaching tools, but they are not guidelines for how you should complete your v

For more information, visit the [Student Conduct and Academic Integrity](#) website.