

Guilford Technical Community College
Arts and Sciences Division, Dr. Carolyn Schneider, Chairman
Department of Biology, Dr. George Whitesides, Chairman

Spring 2007

Biology 110 Principles of Biology Sections 01, 02, and 03

Lecture Hours: 3 Laboratory Hours: 3 Credit Hours: 4

Course Description: This course provides a survey of fundamental biological principles for non-science majors. We'll cover chemistry, cell biology, metabolism, genetics, taxonomy, evolution, ecology, diversity, and other selected topics. Upon completion, students will be able to demonstrate increased knowledge and better understanding of biology as it applies to everyday life.

Prerequisite/Co-requisite: Satisfactory reading placement or a grade of C or better in RED 090.

Instructor: Randall Hayes

Email: rdhayes1501@gtcc.mailcruiser.com

Office Hours: T 10-11am; Th 1-2pm; F 12 -1pm in *Room EB 206-A*

Phone: extension 2431

Class Schedule:

Day and Time: MWF 11:00am-12:00pm

Place: Jamestown campus, Electronics Building, EB101

Laboratory Schedule:

Day and Time:	Room:
T 9:00-12:00am (Section 01)	EB 205
Th 9:00-12:00am (Section 02)	EB 225
Th 1:00-4:00pm (Section 03)	EB 205

Required Textbooks:

Biology: Life on Earth, 7th Edition, Audesirk and Audesirk, Prentice Hall

Biology 110 Laboratory Manual, Shelp, Thomson Learning Custom Publishing

Learning Competencies: Things you will be able to do by the end of this course.

1. Apply the Scientific Method to experimental investigations and biological concepts.
2. Characterize the basic structure and properties of matter.
3. Explain and distinguish among the structures and functions of biological macromolecules present in living processes.
4. Illustrate cell composition and apply the Cell Theory to living organisms.
5. Distinguish the fundamental concepts of energy as they apply to metabolic processes.
6. Explain and distinguish the processes of cellular respiration and photosynthesis.
7. Diagram mitosis and meiosis and compare and contrast the stages and outcomes of these processes.
8. Analyze qualitatively and quantitatively the basic processes of genetic inheritance.
9. Illustrate the DNA structure and relate its structure to the genetic code.
10. Explain how DNA structure impacts DNA replication, protein synthesis, and mutation.
11. Illustrate the modern taxonomic system of classification as it applies to living organisms.
12. Distinguish among the categories of evidence that demonstrates evolutionary change.
13. Distinguish evolution from Darwinian natural selection and assess how natural selection drives the evolution of organisms.
14. Employ the basic concepts of ecology as they relate to the environment.
15. Develop and utilize elementary laboratory skills.

Methods: Lectures, interactive class discussions and demonstrations, laboratory experimentation, discussion and problem solving, and reading assignments for lecture and laboratory.

Course Requirements:

Lecture Requirements: Four lecture exams plus one comprehensive final exam. If you take all four lecture exams, the final is optional. If you miss one lecture test, the final exam will serve as your make-up.

Laboratory Requirements: Two laboratory practical exams and weekly lab reports and/or quizzes. NO laboratory exam grades will be dropped!

Evaluation of Performance: Final grade will be based on Lecture (600 points) and Laboratory (400)

College Grading Scale:

A	940-1000
B	860-939
C	780-859
D	700-779
F	0-699

Point Distribution:

4 lecture exams + final	400
Lecture participation	200
2 lab exams	200
<u>Lab participation</u>	<u>200</u>
Total	1000

Quality of Instruction Statement:

The GTCC faculty members are committed to providing quality instruction. If there is a concern about the instruction provided, treatment of an individual or a group of students, or professional conduct of instructors, consult with either the faculty member, department chair, division chair, or read the description of Students' Rights and Responsibilities which can be found in the Student Handbook.

College Attendance Policy:

Regular attendance in this class is essential to receiving the maximum benefit from the educational experience. Students are expected to attend class, be on time and be prepared for all class sessions and labs. In all cases of absences, the student is responsible for making up all missed class work and for coming prepared to the class following the absence. After the drop-date all students remaining in the course will be given a grade based on performance. A grade of W will be issued only if the student has dropped within the deadline published by the college. A student missing more than the number of clock hours the class meets each week maybe asked to drop the course. In all cases it is the responsibility of the student to withdraw from the course prior to the deadline published by the college.

Disability Access Statement:

If a student has a disability that may affect his/her academic performance, and is seeking accommodations, it is the student's responsibility to inform the instructor and the Disability Access Service Director (Mrs. Angela Leak, MCC Rm. 283, ext. 2325) as soon as possible. It is important to request accommodation early enough to give Disability Access Services adequate time to consider your request and recommend reasonable accommodations. Instructors will provide necessary accommodations based on the recommendations of Disability Access Services.

Study Strategies: The single biggest thing you can do is read the chapter BEFORE you come to class. To encourage this, I will be posting pre-lecture outlines and pre-class quizzes on Blackboard. You are highly encouraged to form study groups. Discuss the topics, quiz one another, utilize the outlines provided during class and online, and visit during instructor office hours for help! Tutoring services are available in the Health Careers Center RM100-102 (ext. 2528 or 2361) on the Jamestown Campus to students experiencing difficulty.

Cell Phones and Pagers: As a consideration to others please turn your pagers and cell phones off in the classroom. Use of cell phones in class is not allowed. In the case of an emergency, please see the instructor.

Tentative Lecture Schedule

DATE	TOPIC	CHAPTER NUMBERS	PAGES
JANUARY			
8	Course Introduction/Overview Learning Styles, Bloom's Taxonomy		
10	What is Life?	Chapter 1: 1-18	
12	Systematics: Seeking Order Amidst Diversity	Chapter 18: 344-357	
15	MLK DAY		
17, 19, 22	Atoms, Molecules, and Life	Chapter 2: 20-35	
24	Water, Causality		
26	How do Ecosystems Work? Nutrient Cycles	Chapter 41: 840-861	
29	TEST 1		
31	Biological Molecules	Chapter 3: 36-55	
FEBRUARY			
2, 5, 7	Biological Molecules	Chapter 3: 36-55	
7, 9	Cell Membrane Structure and Function	Chapter 4: 56-73	
12, 14, 16	DNA: The Molecule of Heredity	Chapter 9: 148-161	
16	Guest Speaker: Liz Schmid, Wild Birds Unlimited		
19, 21, 23	Gene Expression and Regulation	Chapter 10: 162-183	
26	Biotechnology	Chapter 13: 240-262	
28	TEST 2		
MARCH			
2	The Continuity of Life: Cellular Reproduction	Chapter 11: 184-207	
5, 7	Development		
9, 12	Patterns of Inheritance	Chapter 12: 208-239	
14	Principles of Evolution	Chapter 14: 264-281	
16, 19	How Organisms Evolve	Chapter 15: 282-299	
21, 23	Origin of the Species	Chapter 16: 300-315	
26, 28	The History of Life	Chapter 17: 316-342	
30	TEST 3		
APRIL			
2-7	NO CLASS (SPRING BREAK)		
9	Viruses and Bacteria	Chapter 19: 360-371	
11, 13	Cell Structure and Function	Chapter 5: 74-97	
16, 18	Energy Flow in the Life of a Cell	Chapter 6: 98-113	
20	Capturing Solar Energy: Photosynthesis	Chapter 7: 114-129	
23, 25	Harvesting Energy: Glycolysis and Cellular Respiration	Chapter 8: 130-146	
27	How do Ecosystems Work? Energy Flow	Chapter 41: 840-861	
30	TEST 4		
MAY			
2	Population Growth and Regulation	Chapter 39: 796-817	
4	Community Interactions	Chapter 40: 818-839	
7	COMPREHENSIVE FINAL EXAM	ALL	

Tentative Laboratory Schedule

Spring Semester 2007

Day and Time:	Room:
T 9:00-12:00am (Section 01)	EB 205
Th 9:00-12:00am (Section 02)	EB 225
Th 2:00-5:00pm (Section 03)	EB 205

DATE	TOPIC	CHAPTER NUMBERS	PAGE
JANUARY			
9, 11	Syllabus/Safety Quiz, Taxonomy	Chapter 16	
16, 18	Periodic Table, The Microscope	Chapter 3	
23, 25	Water, pH, decomposition chamber		
30	Life Chemistry	Chapter 4	
FEBRUARY			
1	Life Chemistry	Chapter 4	
6, 8	Enzymes	Chapter 7	
13, 15	PRACTICE TEST/ DNA Structure and Function	Chapter 14	
20,22	LAB TEST 1/ DNA Structure and Function	Chapter 14	
27	DNA Technology	Chapter 15	
MARCH			
1	Mitosis, Meiosis	Chapter 10 Chapter 11	
6	SNOW DAY MAKE-UP: Life Chemistry	Chapter 4	
6, 8	Genetics Concepts	Chapter 12	
13, 15	Human Genetics	Chapter 13	
20, 22	Evolution Simulations	TBA	
27, 29	History of Life	TBA	
APRIL			
2-7	NO CLASS (SPRING BREAK)		
10, 12	Cell Membranes	Chapter 6	
17, 19	LAB TEST 2/ Fermentation	Chapter 9	
24, 26	Alien Ecosystem Project	TBA	
MAY			
1, 3	Population Ecology	Chapter 17	
7	Final Project Due		