

BIOLOGY 1610: Principles of Biology I

Spring Semester 2015

Instructor: Dr. Karen L. Bauer

Office: Science 103

Office Hours: 8:00 – 8:50 am Thursday; 9:00 – 9:50 am F; 10:00 – 10:50 am MW;
2:00 – 2:50 pm Tuesday (or by appointment)

Phone: 435-652-7772 **E-mail:** bauer_k@dixie.edu

Lecture: MTWF 8:00 - 8:50 am Science 113 (Section 01, CRN 20661) 4 credits
(See Syllabus for topical coverage)

Lab: Labs are graded separately and count 1 credit. You should still register for a lab along with the lecture however. You will receive a separate detailed lab syllabus including the grading policy specific to it when you attend your first lab session. **Labs begin this week.**

About This Course: This course is an introduction to fundamental biological principles and concepts designed for students who plan to be biology or other science majors. The course may be taken by non-science students to meet the general education graduation requirements in the Life Sciences. Principles of Biology I is the first course for science majors and is a prerequisite to most biology classes.

General Education Objectives: These objectives are common to all life science courses at Dixie State University. After successful completion of this course, the student will through testing, written or oral reports **fulfill the bolded outcomes:**

- Goal 1: Demonstrate breadth of discipline-specific knowledge
 - o Outcome 1: Students will describe and explain fundamental topics in five principal perspectives of biology:
 - 1. The chemical and molecular machinations operating within all biological processes**
 - 2. The centrality of genetic systems' governance of life's actions from the cellular to the phyletic**
 3. The coordinated regulation of integrated cellular systems and their effect on the physiological functioning of organisms
 - 4. The dynamic interaction of living systems with each other and their environments**
 - 5. The transforming role of evolution in changing life forms and how evolution explains both the unity and diversity of life**
- Goal 2: Demonstrate the capacity to think independently and critically
 - o Outcome 2: **Students will employ scientific methods to acquire, analyze and apply knowledge of biological phenomena.** (more so in lab rather than lecture)
 - o Outcome 3: **Students will evaluate scientific ideas and information while maintaining receptivity to potential alternative predications.**

- Goal 3: Effectively convey scientific literacy through various mediums of communication
 - o Outcome 4: Reading Comprehension: Students will analyze and critique scientific literature: identifying hypotheses, critiquing methods, interpreting data and results, and articulating the context of discussions.
 - o Outcome 5: Written Communication: Students will produce well-written reports and/or research papers covering topics in biology. These papers will be presented in the accepted formats of scientific research articles.
 - o Outcome 6: Oral Presentation: Students will publicly present scientific information covering specific topics in the biological sciences. Presentations will adequately communicate data and information in a clear and logical format.
 1. **explain and apply major concepts of a view of life, the cell, and the genetic basis of life,**
 2. **demonstrate knowledge of the process of science including asking testable questions, using inductive and deductive reasoning in forming hypotheses and in making reliable predictions,**
 3. **explain the objective of science and research including distinguishing among the natural sciences, liberal arts (humanities and fine arts), social and behavioral sciences and pseudo-science,**
 4. **compute ratios, proportions, percentages, decimals, fractions, frequencies and elementary probabilities.**

Specific Course Objectives: Upon successful completion of the assignments, laboratory, exams, and quizzes in this course, the student will:

- demonstrate the ability to reason scientifically.
- apply scientific methods in problem solving.
- create and critique experimental design.
- distinguish between true science and pseudoscience.
- describe the basic chemical composition of living organisms.
- relate chemical properties to physiological functions in living organisms.
- describe various cellular structures and their functions.
- follow the breakdown of a glucose molecule through metabolic pathways.
- compare energy-acquiring and energy-releasing pathways in metabolism.
- describe the movement of chromosomes during cell division (mitosis and meiosis).
- describe patterns of inheritance in Mendelian genetics.
- perform monohybrid and dihybrid genetic crosses.
- solve basic genetics and inheritance problems.
- describe the structure and function of DNA.
- describe the process by which genes are expressed as protein products.
- gain an insight into genetic engineering and associated ethical arguments.
- describe the processes of evolution, having gained a knowledge of basic genetics.
- realize that evolution is more than a powerful theory; evolution is a fact.
- describe the principles of population ecology and community interactions.
- discuss the impact of overpopulation on biotic and abiotic components of the biosphere.
- build a strong basic foundation of biological principles in order to support more advanced concepts.

Required Textbook: *Campbell Biology*, Tenth Edition. Jane B. Reece, et al. Pearson Publishing. 2014. ISBN 9780321775658 (Cost: New - \$242.00, Used - \$186.50, New rental - \$130.75, Used rental - \$100.75, eBook version - \$99.00)

Note: This is the same text used for BIOL 1620: Principles of Biology II.

Other Required Class Materials: The following items will be provided by you:

- a. Seven (7) SCANTRON test forms [the bluish-green Form No. 882-ES].
- b. No. 2 pencils with good erasers for recording examination answers.
- c. Notebook or other suitable paper for class notes. A three-ring loose-leaf binder is recommended because it will hold class notes, and various handouts.

NOTE: A 10% penalty will be assessed if you fill out a quiz or assignment with red/pink pen or red/pink pencil. Use #2 pencil or blue/black ink please.

Lecture/Discussion Schedule: The lecture/discussion is scheduled four days each week as noted. You must be registered in the following lecture/discussion section:

Section 01 (CRN 20661) 8:00 - 8:50 am MTWF BAUER K

Other Important Dates to Remember: Please make note of the following dates important to your success this semester. You will see such items as the last date for a full refund, the last date to drop or audit, the last date for complete withdrawal from school, etc.

REGULAR SEMESTER DATES WORTH NOTING

Jan. 12	Classwork starts
Jan. 16	Last day to add without signature
Jan. 19	Martin Luther King Jr. Day -- No School
Jan. 22	Drop/Audit fee begins (\$10 per class)
Jan. 27	\$50 Late registration/payment fee
Feb. 2	Pell Grant Census
Feb. 2	Last day for refund
Feb. 2	Last day to drop without receiving a "W" grade
Feb. 2	Graduation Application Deadline for Spring 2015 associate degrees
Feb. 4	Courses dropped for non-payment
Feb. 6	Last day to ADD/AUDIT classes
Feb. 16	President's Day Holiday
Mar. 2	Graduation Application Deadline for Summer 2015 baccalaureate degrees
Mar. 2	Mid-term grades due
Mar. 6	Last day to DROP individual class
Mar. 9-13	Spring Break
Apr. 1	Graduation Deadline for Fall 2015 baccalaureate degrees
Apr. 10	Last day for complete withdrawal
Apr. 13	Fall Registration open to Seniors (90+ credits)
Apr. 14	Fall Registration open to Juniors (60+ credits)
Apr. 15	Fall Registration open to Sophomores (30+ credits)
Apr. 16	Fall Registration open to all students
Apr. 29	Classwork ends
Apr. 30	Reading Day
May 1, 4-7	Final Exams
May 8	Commencement

Attendance: Following is the Dixie State University “Attendance Policy” –

“Regular and prompt attendance in classes and laboratory sessions is expected of every Dixie State University student. Attendance requirements are established by each instructor and such requirements are enforced by the University. No absence excuses a student from completing work missed. It is the student’s responsibility to find out which assignments will be missed.”

“Students receiving scholarship assistance other than federal aid are being sponsored by the citizens of the state of Utah or private donors. As recipients, these students are expected to exert a full effort in their academic studies. As a condition of accepting these funds, and for the privilege of representing Dixie State University in co-curricular activities, these students should plan on regular attendance in classes and laboratories for which they are registered. Attendance will be monitored and those students not attending on a regular basis are subject to termination of their scholarship and/or suspension from participation in activities.”

Attendance is essential. If you do not attend class regularly, you hurt yourself because not only will you fall behind, you will also miss out on valuable information that cannot be easily gleaned from a classmate’s notes. Please be here to get the information firsthand.

A Word About Cellular Phones, Picture Phones, iPods, MP3s, and Text Messaging: The use of electronic communications devices is strictly forbidden during class lectures and exams! All cellular phones must be turned off during class. Too many students in the past have answered their phones and carried on a conversation or otherwise used a communication device to text message, surf the Web and such while I am trying to lecture. Not only is this behavior extremely rude to me, but it is also rude to others who are trying to pay attention and learn. I will not tolerate cellular phones ringing during class. Be advised that if yours rings, a minimum of 15 points will be deducted from your grade. If you disrupt class by leaving to respond to a phone call or you use your text messaging function, you will also receive a point reduction. If you leave class to respond to a cellular phone call, do not return to class and cause further disruption. If your phone calls and text messages are more important than this class, then drop the class.

Please Do Not Bring Your Young Children To Class. Too often children cause disruption during class because they are fidgety, get bored, and have short attention spans. It is against college policy to bring children to class. Please try to find other arrangements.

Examinations: Six examinations (100 points each) will be given during the course, PLUS a **comprehensive** final exam worth 250 points. Exams will cover material studied from the beginning of the course or the previous exam. You should study both the text and your lecture notes. Early exams will NOT be given, and late exams [given only in an emergency] will have a 10% penalty assessed. Any late exam may be different and more difficult than the one taken at the regularly scheduled time. Inform the instructor whenever illness (you may be asked to provide a doctor’s signed note) or emergency occurs, especially if an exam is scheduled – BEFORE the scheduled exam date, if possible. Routine make-up exams will NOT be given in this course. In the case of an open book exam, if ample time (two or more weeks) is provided in which to take the exam, the exam must be completed by the given deadline. NO EXCEPTIONS!! This includes unexpected illness. Don’t procrastinate until the last minute on open book exams.

Writing Assignments and Quizzes in Lecture/Discussion Classes: Several written assignments and quizzes worth a total of 150 points will be given throughout the semester. The exact format and time frame will be at the discretion of the instructor. The point values of these assignments and quizzes will range from 10 - 45 points each. The function of these exercises is to encourage you to keep up with your reading and studying. The dates for quizzes will usually be announced in class, but I reserve the right to administer unannounced quizzes and in-class assignments. Questions will be varied but may include short-answer, fill-in-the-blank, true-false, multiple choice, problems, etc.

Late assignments will have a 10% penalty assessed for EACH day that the assignment is late. You will NOT be allowed to make up a quiz for any reason unless you notify the instructor in advance of your absence or illness. You may leave a phone message or e-mail (bauer_k@dixie.edu) if you are unable to take the quiz at the scheduled time. This still does not guarantee that you will be allowed to take the quiz. Any quiz taken late will have a 10% penalty assessed.

One final note: Make certain that you do your own work. Please do not copy the work of others. Besides not helping you, this practice is illegal – it is called plagiarism. Students who copy assignments, whether suspected or apparent, or who permit another or others to copy, will receive NO credit for the assignment.

Grading Policy: Grades will be based on a total of 1000 points possible, as follows:

Examinations (six worth 100 points each)	600 points
Writing assignments/quizzes	150 points
Final examination	250 points

You may expect the following grade according to your total points earned:

A = 93.6-100% (936 - 1000 points)	C = 73.6-76.9% (736 - 769 points)
A- = 90.0-93.5% (900 - 935 points)	C- = 70.0-73.5% (700 - 735 points)
B+ = 87.0-89.9% (870 - 899 points)	D+ = 67.0-69.9% (670 - 699 points)
B = 83.6-86.9% (836 - 869 points)	D = 63.6-66.9% (636 - 669 points)
B- = 80.0-83.5% (800 - 835 points)	D- = 60.0-63.5% (600 - 635 points)
C+ = 77.0-79.9% (770 - 799 points)	F = < 60% (599 points and below)

Grades will NOT be based on the curve. If everyone earns an “A,” everyone gets an “A.” The percentages or total points as outlined above may be decreased but will NOT be increased.

Extra Credit: The only extra credit available in this course is as follows:

85 points (10 points per hour exam, 25 points on the final exam) built right into the exam itself (i.e. You can earn up to 110 points per exam or 275 on the final.) This is more fair than giving a subjective assignment and everyone has an equal opportunity this way. After all, you have to study for the exams anyway. Do not come to me toward the end of the semester and ask if there is anything you can do to get extra credit (writing a report and such). The answer is NO. Spend your time wisely studying the assigned material.

Academic Integrity or Dishonesty (Cheating and Plagiarism): The instructor will not tolerate any act of cheating which she observes. If any student is observed cheating on any examination or assignment, the instructor will note the time and event and the student will receive no credit for that assignment. Such act of cheating will include the use of books or

notes unless these are expressly permitted by the instructor, looking upon another student's paper during the time an examination is in progress, consulting others inside or outside of class using text messaging functions, etc. If a second offense is committed by a student, he/she will be subject to further disciplinary action (See "Code of Conduct," Dixie State University Catalog or Student Handbook).

D Mail Statement: You are required to frequently check your dmail account. Important class and college information will be sent to your dmail account, including DSU bills, financial aid/scholarship notices, notices of cancelled classes, reminders of important dates and deadlines, and other information critical to your success at DSU and in your courses. If you don't know how to access your dmail account, go to www.dixie.edu and select "Dmail" from the left column. To locate your dmail username and password, go to www.dixie.edu, and click on "Log in to student services."

Students with Disabilities:

If you are a student with a medical, psychological or a learning difference and requesting reasonable academic accommodations due to this disability, you must provide an official request of accommodation to your professor(s) from the Disability Resource Center **within the first two weeks** of the beginning of classes. Students are to contact the center on the main campus to follow through with, and receive assistance in the documentation process to determine the appropriate accommodations related to their disability. You may call **(435) 652-7516** for an appointment and further information regarding the Americans with Disabilities Act (ADA) of 1990 per Section 504 of the Rehabilitation Act of 1973.

Important Links:

- Disability Resource Center** - dixie.edu/drcenter
- IT Student Help Desk** - dixie.edu/helpdesk
- Library** - library.dixie.edu
- Testing Center** - dixie.edu/testing
- Tutoring Center** - dixie.edu/tutoring
- Writing Center** - dixie.edu/english/dsc_writing_center.php

LECTURE SCHEDULE and READING ASSIGNMENTS
BIOL 1610: Principles of Biology I
Spring Semester, 2015

	Date	Chapter (Reading Assignments in parentheses)
Jan.	12 Mon	Syllabus. Introduction to the course.
	13 Tues	1 Introduction: Themes in the Study of Life (pp. 1-26)
	14 Wed	1 (concluded)
	16 Fri	2 The Chemical Context of Life (pp. 28-43)
	19 Mon	Martin Luther King Jr. Day -- NO SCHOOL
	20 Tues	2 (concluded)
	21 Wed	3 Water and Life (pp. 44-55)
		(Jan. 22 -- Drop Fee begins \$10 per class)
	23 Fri	4 Carbon and the Molecular Diversity of Life (pp. 56-65)

	Date		Chapter (Reading Assignments in parentheses)
Jan.	26	Mon	4 (concluded)
	27	Tues	5 The Structure and Function of Large Biological Molecules (pp. 66-91)
	28	Wed	5 (concluded)
	30	Fri	EXAM 1 - Chapters 1, 2, 3, 4, 5
Feb.	2	Mon	6 A Tour of the Cell (pp. 93-123)
	3	Tues	6 (continued)
	4	Wed	7 Membrane Structure and Function (pp. 124-140)
	6	Fri	7 (concluded) (Last day to audit)
	9	Mon	8 An Introduction to Metabolism (pp. 141-161)
	10	Tues	8 (concluded)
	11	Wed	9 Cellular Respiration and Fermentation (pp. 162-184)
	13	Fri	9 (concluded)
	16	Mon	Video: Cellular Respiration (six approx. 10-minute videos)
	17	Tues	10 Photosynthesis (pp. 185-209)
	18	Wed	10 (concluded)
	20	Fri	EXAM 2 - Chapters 6, 7, 8, 9, 10
	23	Mon	President's Day – No School
24	Tues	12 The Cell Cycle (pp. 232-251)	
25	Wed	12 (continued)	
27	Fri	12 (concluded)	
Mar.	2	Mon	13 Meiosis and Sexual Life Cycles (pp. 252-266) (Midterm Grades Due)
	3	Tues	13 (concluded)
	4	Wed	14 Mendel and the Gene Idea (pp. 267-291)
	6	Fri	14 (continued) (Last day to DROP individual class)
Mar. 9 – 13		SPRING BREAK -- No School	
Apr.	16	Mon	14 (concluded)
	17	Tues	15 The Chromosomal Basis of Inheritance (pp. 292-311)
	18	Wed	15 (continued)
	20	Fri	15 (continued)
	23	Mon	15 (concluded) (Open Book EXAM 6 in Testing Center)
	24	Tues	EXAM 3 - Chapters 12, 13, 14, 15
	25	Wed	16 The Molecular Basis of Inheritance (pp. 312-332)
	27	Fri	16 (concluded)
	30	Mon	17 Gene Expression: From Gene to Protein (pp. 333-359)
	31	Tues	17 (continued)
	1	Wed	17 (concluded)
	3	Fri	20 DNA Tools and Biotechnology (pp. 408-435) (selected topics)
	6	Mon	20 (continued)
	7	Tues	20 (concluded)
	8	Wed	21 Genomes and Their Evolution (pp. 436-460) (selected topics)
10	Fri	EXAM 4 - Chapters 16, 17, 20, 21	

(Last day for complete withdrawal)

Date	Chapter (Reading Assignments in parentheses)
Apr. 13 Mon 22	Descent with Modification: A Darwinian View of Life (pp. 462-479)
14 Tues 22	(continued)
15 Wed 22	(continued)
17 Fri 23	The Evolution of Populations (pp. 480-499)
20 Mon 23	(continued)
21 Tues 23	(concluded)
22 Wed 24	The Origin of Species (pp. 500-518)
24 Fri 24	(continued)
27 Mon 24	(continued)
28 Tues 24	(concluded)
29 Wed	EXAM 5 - Chapters 22, 23, 24 EXAM 6 (open book) Ch. 52 – 56 must be done by 10:00 pm today
May 4 Monday	FINAL EXAM - 7:30 – 9:30 am in SCI 113

**Comprehensive (250 points) covering Chapters 1-10, 12-17, 20-24
(The ecology chapters 52-56 will not be covered on the final.)**

→ **NOTE: EXAM 6** will be given in the testing center as an **OPEN BOOK** exam. It seems I always underestimate the time needed to cover the first five units. However, I do want you to be exposed to the ecology information. An open book exam does this. Incidentally, this is also an interesting assessment of your reading comprehension. You will be notified when EXAM 6 is placed in the testing center (no later than MARCH 23) so you will have at least five weeks to complete it as your schedule permits. **This test must be completed no later than APRIL 29 at 10:00 pm.** There will be no exceptions to this, not even illness or hospitalization! Please read and familiarize yourself with the following chapters BEFORE you go into the testing center to take the open book exam. You will spend much less time in the testing center if you read beforehand. The exam consists of 55 multiple choice questions. **Do not procrastinate on taking this exam or you will have too many exams bunched up at the end of the semester!**

CHAPTERS COVERED ON THE OPEN BOOK EXAM ARE:

Chapter 52: An Introduction to Ecology and the Biosphere (pp. 1158-1183)

Chapter 53: Population Ecology (pp. 1184-1207)

Chapter 54: Community Ecology (pp. 1208-1231)

Chapter 55: Ecosystems and Restoration Ecology (pp. 1232-1253)

Chapter 56: Conservation Biology and Global Change (pp. 1254-1279)

Note: It is intended that the topics will be discussed on the dates indicated. However, some topics may overlap the dates according to time and circumstances.

Disclaimer: The instructor has no intention of discussing all textbook information in class – there is insufficient time. Nevertheless, you are held accountable for the information, whether discussed or not discussed, unless otherwise announced. Prepare your assignments accordingly.
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