

BIOLOGY 105 - CONTEMPORARY BIOLOGY - FALL 2015

Books and Materials.

Reece, J.B., M.R. Taylor, E.J. Simon and J.L. Dickey. & K. Hogan 2015 Biology - Concepts & Connections, Eighth Edition, Pearson Education, Inc., Boston, MA, 779 pages.

Biology 105 - Contemporary Biology Study Guides – Course materials in MyCourses

Lectures.

01 CRN 17422 M W F 11:30 am – 12:20 am Newton 204

Instructor.

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Office Hours:, M & W 12:30-1:20, R 1:00-1:50, & F 10:30-11:20, or by appointment.

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Course Mission Statement & Learning Outcomes.

Contemporary Biology (BIOL 105) is a non-biology majors course which fulfills one-half of the Natural Science core requirement at Geneseo. BIOL 105 is a lecture course that concerns the application of biology to contemporary personal, social, and environmental problems, especially those resulting from the use of modern technology. To receive Natural Science core credit a student must also take the 1 credit Contemporary Biology Laboratory, BIOL 106.

Too often, non-majors biology has simply been given as a mini-biology major's course. This is not the case for Bio 105. The goal of Bio 105 is:

To promote "biological literacy" rigorously and interestingly enough to act as a springboard for future elective studies in biology and to provide a level of skill and understanding that benefit informed citizens as they face life-science related issues (e.g. medicine) in the future.

Specific BIOL 105 Learning Outcomes.

1. Develop skills of observation of the living world
2. Know the basic facts and concepts underlying contemporary biological issues especially issues related to medicine, recombinant DNA and genetic engineering, and global change
3. Understand and use scientific reasoning to solve biological problems.

4. Acquire learning skills including locating information and critical thinking to become an independent lifelong learner.

What is Required for Biological Literacy?

There are three elements necessary for learning any subject in science:

1. The mastery of information unique to the subject. These are the facts, ideas and concepts that are at the base of the subject. They literally represent the models that we build (conceptually, or in words, mathematical relationships and pictures) to explain the world around us. For example, no one has really been able to see an atom, but we have an idea in our minds about what it looks like; we can explain its structure, write a set of equations that describe its properties and draw a picture of it - these are all models!
2. An understanding of the evidence that supports the ideas and concepts about science. The scientific method provides a mechanism by which we gather information to build our ideas (models) about the world around us. This is what separates science from other disciplines - our models can be used to make predictions, and if these predictions can be tested, it is science!!
3. Use the information about the subject to make decisions and solve problems. This is an aspect that teachers like to call critical thinking. It is in using information that what may seem abstract and unimportant (e.g. gene flow in populations or the Hardy-Weinberg equation) is connected to real world contemporary problems such deciding how to: manage a forest, preserve species diversity in the environment, or develop sustainable agriculture in the third world.

How Will You Learn?

You will learn by spending time gathering basic knowledge of biology and then by using this knowledge to critically analyze contemporary problems.

Your textbook was selected because it does an excellent job of presenting the facts you need to master as well as the evidence behind the facts. In many ways your book, with its clear writing and informative graphics, is a much better medium for learning than is a lecture. **Therefore, much of the learning of “factual” will be done on your own! You are expected to spend several hours studying outside of class for every hour you are in the class. You will be provided with detailed ‘Study Guides’ describing what you need to study and what you should know after studying. This aspect of your learning has to be done on your own. There will be no formal lectures which have as their purpose the transmittal of facts!!** There will be presentations and activities in class where material you already studied will be expanded and clarified, and you will be given ample opportunities to raise questions. This will be a difficult process for many of you because it will be a dramatic change in how knowledge is presented and how you learn; however it is an important step in your cognitive development - and it is one of the reasons you are in college.

Much of the time in the classroom will be spent on looking at contemporary situations and critically analyzing problems using the knowledge you have. Some of this will be by a case study approach, where you will be presented by a dilemma and need to find a solution. Occasionally we will do brief (group) exercises in class that will be collected and graded on a three point scale.

Evaluation.

Because much of the work in this course will be done on your own, we will use a process called “**Informative Testing**” to help demonstrate that you have been successful in your studies. Periodically in class there will be a quiz that covers the material in the Study Guide for that class and one or two review questions from the previous day’s class. These quizzes will be given using an interactive system called Top Hat. You will be given a free account to Top Hat. To use it you must bring a phone or your laptop computer to class.

These quizzes should be an incentive to make sure you keep up with the work and to help you to understand materials and problems presented in class. Since the objective of outside readings is to learn the basic language and concepts about biology, many of the questions asked in informative testing will often be factual in nature. Because we recognize that emergencies arise and you may not be able to do all the reading or make class, the lowest 25% of the scores for the semester will be dropped. Because of this, **no make-up quizzes will be given**. The average of the remaining 75% of the scores will be the equivalent of an exam.

There will be three formal examinations covering the lecture material plus a final examination. The final will include questions on the material from the last quarter of the semester plus some comprehensive questions. The questions on the examinations and final will emphasize critical thinking and using the information you already know. All the exam scores will be used in computing the final grade.

Cheating will not be tolerated, so keep your gaze on your own materials. The instructor will not hesitate to invoke the appropriate college procedures for cheating if necessary.

The distribution of points used in the calculation of your final grade is shown below. You may access your grades on MyCourses. They will be updated frequently so that you can easily track your progress in the course.

Exam #1	18 pts.
Exam #2	18 pts.
Exam #3	18 pts.
Exam #4	18 pts.
Quizzes	22 pts.
Class Exercises	6 pts

Total 100pts.

Letter grades will be awarded based on the following point distribution:

> 93%	A
90-92%	A-
87-89%	B+
83-86%	B
80-82%	B-
77-79%	C+
73-76%	C
70-72%	C-
60-69%	D
< 60%	E

Tentative Examination Schedule:

1st	Exam	-	F	September	19	
2nd	Exam	-	F	October	17	
3rd	Exam	-	M	November	10	
Final	Exam	-	T	December	17	8:00-11:00 am.

Note: No early Final Exams are given, so if you intend to take this course, do not make arrangements to go home until after the Examination.

Accommodations

SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities. Accommodations will also be made for medical conditions related to pregnancy or parenting. Students should contact Dean Buggie-Hunt in the Office of Disability Services (tbuggieh@geneseo.edu or 585-245-5112) and their faculty to discuss needed accommodations as early as possible in the semester.

WEEK	DATE	DAY	TOPIC	Study Guide
1	31-Aug-15	M	Introduction 1.1-1.7 & 1.10	00
	2-Sep-15	W	The Scientific Method 1.8, 1.9, 1.11, & 9.2	01
	4-Sep-15	F	Mendelian Genetics 9.3-9.7, & 9.11-9.17	02
2	7-Sep-15	M	NO CLASS - LABOR DAY	
	9-Sep-15	W	DNA to RNA to Protein 10.1-10.4, 10.6-10.12 & 10.15	03
	11-Sep-15	F	How Genes Work - I 10.16, & 11.2-11.11	04
3	14-Sep-15	M	How Genes Work - II 11.12-11.18	05
	16-Sep-15	W	Recombinant DNA - I 12.1-12.7, 10.22 & 10.23	06
	18-Sep-15	F	Recombinant DNA - II 12.8-12.16	07
4	21-Sep-15	M	The Human Genome - I 12.17-12.21, & 8.18-8.23	08
	23-Sep-15	W	The Human Genome - II 9.8-9.10, & 9.20-9.23	09
	25-Sep-15	F	EXAM #1	
5	28-Sep-15	M	Microevolution: How Populations Evolve 13.1, 14.1-14.3, & 13.7-13.11	10
	30-Sep-15	W	Microevolution: The Origin of Species 13.12-13.18, & 14.4-14.10	11
	2-Oct-15	F	Macroevolution: The Fossil Record 13.1-13.6, 14.8, 14.10, & 15.4-15.10	12
6	5-Oct-15	M	Macroevolution: Tracing Evolutionary History 15.11-15.19	13
	7-Oct-15	W	The Origin of Life 15.1-15.3, 16.1, 16.7 & 16.8	14

WEEK	DATE	DAY	TOPIC	Study Guide
	9-Oct-15	F	The Evolution of Early Life: The Procaryotes 16.2-16.6, & 16.9-16.11	15
7	12-Oct-15	M	FALL BREAK	16
	14-Oct-14	W	Plant Diversity - Evolutionary Trends - I 16.12-16.15, 16.18-16.19, & 17.1-17.2	17
	16-Oct-15	F	Plant Diversity - Evolutionary Trends- II 17.3-17.10, & 17.12-17.19	18
8	19-Oct-15	M	Animal Diversity - Evolutionary Trends 18.1-18.4, & 18.14-18.16	
	21-Oct-15	W	Human Evolution - The Primate Lineage 19.9-19.17	19
	23-Oct-15	F	EXAM #2	
9	26-Oct-15	M	Unifying Concepts of Animal Structure and Funct 20.1-20.8, 20.10-20.11, & 20.13-20.15	20
	28-Oct-15	W	The Immune System - I 23.12-23.15, & 24.1-24.5	21
	30-Oct-15	F	The Immune System - II 24.6-24.13	22
10	2-Nov-15	M	Contemporary Immunology 10.8-10.20, & 24.14-24.18	23
	4-Nov-15	W	Chemical Regulation in Animals 26.1, 26.4-26.6, & 26.8-26.9	24
	6-Nov-15	F	Nervous Systems - I 28.1-28.9	25
11	9-Nov-15	M	Nervous Systems - II 28.11-28.20	26
	11-Nov-15	W	Control Systems in Plants - I 33.1-33.8	27
	13-Nov-15	F	Control Systems in Plants - II 33.9-33.13	28
12	16-Nov-15	M	EXAM #3	

WEEK	DATE	DAY	TOPIC	Study Guide
	18-Nov-15	W	Animal Behavior: Genetic Programming & Experi 35.1-25.11	29
	20-Nov-15	F	Animal Behavior: Biorythms and Behaviors 35.12-35.23	30
13	23-Nov-15	M	Population Growth Models 36.1-36.8	31
	25-27-Nov	W/F	THANKSGIVING BREAK	
14	30-Nov-15	M	Population Ecology - Human Population Growth 36.9-36.11	32
	2-Dec-15	W	Community Ecology: Species Interactions, "Stabil 37.1-37.7, & 37.10-37.13	33
	4-Dec-15	F	Ecosystem Ecology - Energy Flows & Nutrient Cy 37.8-37.9, 34.18, & 37.14-37.21	34
15	7-Dec-15	M	Ecosystem Ecology - Disruption of Ecosystems 37.22-37.23, 38.9-38.11	35
	9-Dec-15	W	The Biosphere - The Earth's Major Ecosystems 34.1-34.6, & 34.8-34.17	36
	11-Dec-15	F	Human Population Growth and Environmental Pro 38.1-38.3, 38.12	37
16	14-Dec-15	M	Global Environmental Problems 38.5-38.9	38
	17-Dec-15	T	FINAL EXAM 8:00-11:00 pm	