

## Syllabus General Biology, Bio 112

Dr. Donna Perkins-Balding & Dr. Adam Weaver  
WebCT Course Website: <http://webct2.spelman.edu/>

### Rationale for the Course

General Biology 112 is the second course of a two-course introductory sequence for Biology majors. The overall goal of this course is to continue building the foundation that was begun in General Biology 111, while moving from the cell to the system and organismal levels. Specifically, the lecture component of the course presents an introduction to evolutionary theory, an overview of animal diversity, an examination of animal anatomy and physiology, and finally an introduction to animal behavior. Although humans are used as the primary model for discussions of anatomy and physiology, evolutionary relationships and trends are introduced. The laboratory exercises provide an opportunity for you to examine actual specimens of the animals introduced in lecture. You will also dissect a fetal pig to gain insights into mammalian anatomy and physiology.

### Course Instructors (office hours will be announced in lecture)

Dr. Donna Perkins-Balding & Dr. Adam Weaver  
Lecture Sections 01 - 02  
Lecture: TTh 9:25 - 10:40 PM  
Office: Room 281 SCI  
Phone: (404) 270 - 5727  
Email: [dbaldin@emory.edu](mailto:dbaldin@emory.edu) & [alweave@emory.edu](mailto:alweave@emory.edu)

### Other section's instructors:

Dr. Joanne Chu, Sections 03 - 05, Email: [jochu@spelman.edu](mailto:jochu@spelman.edu)  
Dr. Michael (Gene) McGinnis (Lecture Coordinator), Sections 06 - 08, Email: [gmcginni@spelman.edu](mailto:gmcginni@spelman.edu)

### Textbook and Materials

The text for this course is *Biology*, 6th edition, by Campbell and Reece (Benjamin/ Cummings, publisher). You will be expected to read each chapter before lecture.

The laboratory manual, *A Photographic Atlas for the Zoology Laboratory*, 4<sup>th</sup> edition, by Van De Graff and Crawley and a dissecting kit are required for the laboratory component. Additional materials will be provided in the form of laboratory handouts. Lab coats are recommended but are not required.

### Pre-requisite

You must have made a grade of **C or better in Biology 111**, or its equivalent, to enroll in Biology 112.

## **Course Policies**

### **Attendance and On-time Policy**

We expect you to attend all lectures and lab sessions. Office hours will not be used to "catch you up" on material you missed due to absence, unless the absence was excused. Attendance can be taken at any time during class. If you are absent without an excuse, your participation grade can suffer.

### **Cell Phones and Pagers**

Cell phone ringers should be turned off when you enter the room. Please leave the classroom for any emergency calls.

### **Make-ups for missed work**

There will be no makeups given for any assignment or exam, unless the absence is approved. Please note that laboratory exercises and lab practicals are especially difficult to make-up, so prompt attendance at every laboratory session is required. Deadlines for turning in assignments will be strictly enforced.

### **Grade Discrepancies**

A form has been included at the end of this syllabus for you to request changes to a grade. Grade changes will only be considered when they are requested on this form. It is your responsibility to make the copies you need.

### **Final Grade**

Your course grade will be determined as a percentage of the total points available. There will be no curves or extra assignments. Your grade will be what you have earned throughout the semester.

### **Interactive Lecture System**

The ILS (Interactive Lecture System) is a means of collecting responses from the class using wireless transmitters. You will be assigned a transmitter with a specific serial number. Whenever requested, you are expected to pick up your assigned transmitter, and then return it at the end of class. You will point the transmitter at a receiver and press the number corresponding to your answer. Sometimes the answers will be collected in anonymous mode, i.e. your answer will not be recorded, but only your participation. Other times the answers may be recorded in an identified mode so that your individual answers will be graded. It will be easy to suggest answers to neighbors, look at the numbers they are pressing, or pick up a transmitter for your friend who is running late. All of these will be considered as academic dishonesty. Never handle any transmitter other than the one assigned to you.

### **Academic Honesty**

We expect you to adhere to the highest standards of academic integrity and honesty. Most of you are planning careers in science or medicine. There is simply no room and no excuse for dishonesty or cheating in these professions. Please refer to the appropriate section of the Spelman College catalog for the College's statement on academic honesty. We will immediately report, in writing, any incident of academic dishonesty to the Office of the Academic Dean. You will also receive a grade of zero on the assignment and be given an "F" in the course.

### **Disabilities**

Any student who feels she may need an accommodation based on the impact of a disability should contact the Office of Disability Services privately to discuss her specific needs. Please contact the Office of Disability Service at 404-223-7590 in MacVicar Hall to coordinate reasonable accommodations.

## Grading

A total of 65% of your final grade in Biology 112 will come from lecture exams and assignments. The other 35% will come from your lab practicals and assignments. Your grade will be based on:

### Lecture Exams (40%)

There will be three exams and a comprehensive final. The final exam will include new material as well as a review of all material presented in the class. Exams will be designed to test both your knowledge and your understanding of the material. They may consist of multiple choice, short answer, sketches, essay, etc.

### Lab Practicals (26%)

Biology 112 laboratory exams are practicals involving the identification of organisms, organs, tissues, and cell types. Specimens may be whole organisms, dissected preserved organisms, organs/models of organs, or histological slides viewed using a microscope.

### Assignments and Quizzes (19%)

A variety of in-class or homework assignments will be given in lecture or lab throughout the semester to help you learn certain concepts and develop problem-solving skills. Assignments may be unannounced at the discretion of the instructor. It is critical to your success in this course that you have read the assigned material before coming to lecture or lab. The discussion-based format of this section makes this especially important. Ask questions on material you are having difficulty with, contribute to class discussion by facilitating the understanding of class material by other students in the course. As an incentive to make certain all assigned material is read before each class, whenever a new chapter is presented a short **WebCT open-book quiz will be due 1 hour prior to the beginning of class**. The results of this quiz will be a starting-point for class discussion. In addition, other short unannounced quizzes may be given within class. The quiz can be found at the WebCT course website:  
<http://webct2.spelman.edu/>

### Writing Assignment (10%)

Please see attached description. Note the dates that you are expected to turn in your outline and paper.

### Class Participation (5%)

As mentioned above, it is important that EVERYONE MUST participate in the class discussion to facilitate the entire class's understanding of the material. This section will generally be graded leniently. However, points can be lost for unexcused absences and lack of participation at the instructor's discretion.

	<u>Assessment</u>	<u>Points</u>	
<b>Lecture</b>	Exams 1-3 (10% for each exam)	30%	
	Final Exam	10%	
	Homework Quizzes	10%	
	Writing Assignment	10%	
	Class Participation	5%	<b>65%</b>
	<b>Lab</b>	Practical 1	8%
	Practicals 2 & 3 (9% for each practical)	18%	
	Quizzes and Assignments	9%	<b>35%</b>
<b>Total</b>			<b>100%</b>

  

<b>Grading Scale</b>	
A	95 - 100
A-	90 - 94
B+	87 - 89
B	83 - 86
B-	80 - 82
C+	76 - 79
C	70 - 75
D+	67 - 69
D	62 - 66
F	0 - 59

### Study Tips for Success

- We believe that you are amongst the best and brightest of your generation. If you are willing to put in the effort, you will succeed in this class.
- Join or create a study group. You will both make friends and stay more interested in the material.
- You will learn (and remember) much more if you study for short periods several times per week rather than try to condense all of your studying in one long session. For example, it is far more effective to study half an hour every night than to have a single four-hour study session once a week.
- Apply yourself to the material before the class when it is discussed. Although you may not fully understand what you read, you will have a general idea of the topic, which will make the discussion easier to follow. Also, you can identify material that is particularly confusing and then be sure the topic is clarified in class by asking questions of your classmates.
- Pay attention and think during class. Although this advice seems obvious, often it is not practiced. Many students spend so much time trying to write down every example presented or every word spoken during discussions that they do not actually understand and process what is being said. Virtually all of the material is in the textbook and is well-organized. Check with the instructors. There is probably no reason to copy every single thing presented in class. Sometimes it is best to just listen and process the material.
- Test yourself regularly beyond the homework quizzes. Do not wait until the end of the chapter or the end of the week to check your knowledge. After each lecture and lab, look over the chapter objectives. Pay particular attention to lecture concepts and laboratory exercises. Be sure you can define and explain important concepts. If you are having trouble, get your questions answered immediately (i.e., re-read the material, visit with the instructors in office hours, and ask questions in class).
- Do not kid yourself! Avoid denial. Many students observe the instructor or other students explain concepts in class and think to themselves, "This looks easy, I understand it". Do you really? Can you really answer questions on the class material without having to leaf through the text? You should test yourself with your book closed to determine your level of mastery.
- Use supplementary material. The WebCT component of this course includes wonderful supplementary materials (movies, animations, virtual "experiments," etc.) that reinforce what you learn from class discussion and the book. If you are having particular difficulty with a chapter (after reading it), you should check to see if any of these supplementary materials deal with the issue that is troubling you.
- Contribute to the class discussion. In the discussion format of this course, you will learn best by contributing in two main ways. First, if you have exhausted all of the opportunities available to you outside of class (book, supplementary materials), perhaps someone in class who better understands that section can explain the material in a way that you can understand. Again, ask questions. Second, by answering someone else's question, you are forced to take your intuitive understanding of the material and express it in words that others can understand. This transformation of the material is exactly the same skills that you will use on the essay questions of your exams.
- If the discussion still does not answer your questions, COME TO OFFICE HOURS! Both instructors will be happy to take the time to help you understand the material.

## Class Schedule

	Date	Lec #	Topic	Chapters
Jan	15	Thurs Lec 1	Organization & Introduction to the Course	
	19	Mon	<i>No Labs This Week</i>	
	20	Tues Lec 2	Early Earth and the Origin of Life	26
	22	Thurs Lec 3	Descent with Modification: A Darwinian View of Life	*22
	26	Mon Lab 1	<i>Three Domains, Parazoa, and Radiata</i>	
	27	Tues Lec 4	The Origin of Species	*24
	29	Thurs Lec 5	Introduction to Animal Evolution & Invertebrates	*32, *33
	2	Mon Lab 2	<i>Protostomia</i>	
Feb	3	Tues Lec 6	Vertebrate Evolution and Diversity & Review	*34, Review
	5	Thurs Exam 1		Exam: 26, 22, 24, 32, 33, 34
	9	Mon Lab 3	<i>Deuterostomia</i>	
	10	Tues Lec 7	Intro. to Animal Structure and Function & The Body's Defenses	*40, *43
	12	Thurs Lec 8	The Body's Defenses	43
	16	Mon	<i>Lab Practical 1</i>	
	17	Tues Lec 9	The Body's Defenses & Animal Nutrition	43, *41
	19	Thurs Lec 10	Animal Nutrition	41
	23	Mon Lab 4	<i>Intro to Histology, Fetal Pig - Digestive System</i>	
	24	Tues Lec 11	Circulation and Gas Exchange	*42
	26	Thurs Lec 12	Circulation and Gas Exchange	42
	1	Mon Lab 5	<i>Endocrine, Immune, Urogenital, and Respiratory Systems</i>	
Mar	2	Tues Lec 13	Circulation and Gas Exchange & Review	42, Review
	4	Thurs Exam 2		Exam: 40, 43, 41, 42
	10-14		<i>Spring Break</i>	

## Class Schedule (cont.)

Date	Lec #	Topic	Chapters
Mar 15 Mon	Lab 6	<i>Circulatory System</i>	
16 Tues	Lec 14	Controlling the Internal Environment	*44
18 Thurs	Lec 15	Controlling the Internal Environment & Chemical Signals in Animals	44, *45
<b>22 Mon</b>		<b>Lab Practical 2</b>	
23 Tues	Lec 16	Chemical Signals in Animals	45
25 Thurs	Lec 17	Animal Reproduction	*46
29 Mon	Lab 7	<i>Nervous System and Sensory Organs</i>	
30 Tues	Lec 18	Animal Reproduction	46
April 1 Thurs	Lec 19	Animal Development & Review	*47, Review
5 Mon	Lab 8	<i>Skeletal System</i>	
6 Tues	<b>Exam 3</b>		<b>Exam: 44, 45, 46, 47</b>
8 Thurs	Lec 20	Nervous Systems	*48
12 Mon	Lab 9	<b>Lab Practical 3- Cumulative Final</b>	<b>LAST LAB</b>
13 Tues	Lec 21	Nervous Systems & Sensory and Motor Mechanisms	48, *49
15 Thurs	Lec 22	Sensory and Motor Mechanisms	49
19 Mon		Field Trip Presentations	
20 Tues	Lec 23	Behavioral Biology	*51
22 Thurs	Lec 24	Flexible Lecture	TBA
27 Tues	Lec 25	Final Review Session	Review
May 1-2 Thurs-Fri		Reading Period	
6 Thurs	<b>Sec 1&amp;2</b>	10:30 - 12:30	<b>Exam 4 (48,49,51) and Comprehensive Final</b>

## Overall Goals

The **goals** of the Biology 112 lecture are to help you:

- understand the central role of evolution as the major organizing principle of the biological sciences.
- become familiar with the diversity of animal life.
- understand the organization and function of the major organ systems of the human body.
- begin to use analytical and critical thinking skills to solve problems and apply scientific knowledge.

The **goals** of the Biology 112 laboratory are to:

- acquaint you with the use of the microscope and dissection of preserved specimens in the study of organs, tissues and cells of animals.
- familiarize you with methods used in the classification of organisms.
- foster an understanding of the relationship between form and function.
- introduce you to the basic principles of histological analysis.
- promote writing and critical thinking skills through the use of relevant microtheme and problem set assignments.

The **objectives** of this course are that after its completion you will be able to:

- describe the role of natural selection in the process of adaptation.
- explain how reproductive isolation is a key to speciation.
- name the phylum to which any common invertebrate belongs.
- explain the selective advantage of such adaptations as cephalization, bilateral symmetry, mesoderm, coelomic cavity, increased body size, increased metabolic rate, segmentation, and homeothermy.
- cite several advantages and disadvantages of marine, freshwater, and terrestrial environments.
- trace the route of a bolus of food through the human digestive system and describe the chemical changes that occur to the food as it is digested and absorbed.
- make a functional drawing of the human circulatory system, identifying each anatomical structure and noting the relative oxygen and carbon dioxide concentrations in each.
- explain how a vaccine works and the cellular reactions that make up an immune response.
- fully describe how the consumption of a diuretic leads to increased urine output.
- diagram and describe examples of negative feedback in the hormonal control of at least three homeostatic mechanisms.
- lead a discussion of the hormonal mechanisms that control the human menstrual cycle.
- describe the sequence of ionic and membrane changes that accounts for the action potential.
- explain the role of calcium in excitation-contraction coupling in vertebrate striated muscle.
- give three examples of the role of complex behaviors in a species' overall fitness.

The **objectives** of the lab are that after its completion you will be able to:

- list the major characteristics used to classify organisms to Kingdom.
- use a binomial key to identify and classify organisms.
- identify major phyla and selected classes of animals.
- describe the types of body plans of the major phyla.
- identify the major cell and tissue types, especially of mammalian systems.
- describe the differences and similarities of protostomes and deuterostomes.
- discuss how the form of an organism and its tissues and organs suits their functions.
- outline the phylogenetic relationships between the different phyla within the animal kingdom.

## Grade Discrepancy Form

Student Name:

Date given to instructor:

Lecture or Lab Section:

Assignment in question:

Date of assignment:

Please describe your concerns. Be specific. Give the question number and why you think the grade should be changed. Describe your reasoning, or cite page numbers in the text that support your position, etc. It is your responsibility to convince the instructor of the reasonableness of your position. Just stating that you want credit for an answer because someone else got credit for a similar answer is not adequate.

**This form must be returned to the instructor within one week of when the assignment was returned.**