

Camden County College
Biology 112 - General Biology 2
Instructor: Dr. Christy Beal
Spring 2015

Location: 8:00-9:50 AM. Lab: Monday/Friday Halpern Hall 211, Wednesday Halpern Hall 208.

Instructor Email: cbeal@faculty.camdencc.edu - I will respond to emails within 48 hours.

Course Website: <http://bealbio2.weebly.com/> All of my lecture slides, handouts, and helpful study suggestions will be posted on this site. Use it! I will be available both before and after class for questions and study help, if you need to arrange more time, email me and we can set up a good meeting time.

Required Texts:

Campbell **Biology** by, Campbell, Reece, Urry, Cain, Wasserman, Minorsky and Jackson 9th or 10th Ed. Published by Pearson, Benjamin Cummings

Laboratory Studies in Animal Diversity 5th Ed. Hickman and Kats

Supplemental Materials: Dissection kit and drawing paper.

Course Description: BIO-112 Biology II-Science (4.00 cr.)

This second semester continuation of the basic principles explored in Biology I examines members of the animal kingdom with particular emphasis on mammalian anatomy and physiology. Laboratory work complements the lecture material.

Prerequisites: ENG-013, ENG-023 and MTH-029

Course Student Learning Outcomes:

Upon completion of this course, the student will be able to:

1. Explain the biological concepts of structural hierarchy, taxonomy, bioenergetics, correlation of structure & function, evolution.
2. Summarize the mechanisms underlying speciation.
3. Discuss the evolutionary origin and general features of the kingdom Animalia:
4. Describe the characteristics of the major invertebrate phyla and the five vertebrate classes.
5. Compare & contrast the organ systems of representative members of the animal kingdom:
6. Use the light microscope and the dissection microscope.
7. Perform dissection of preserved animal specimens.
8. Prepare laboratory illustrations.

I will take attendance every single class, if you cannot make a class; inform me ahead of time that you will not be there. If you need to leave early, tell me at the beginning of class that you will be leaving. There are no make-ups for labs/practicums. It's just too complicated.

YOU are responsible for any and all material covered in class - the best way to do this is to COME TO CLASS each and every time! In this one semester we will cover a lot of material in biology. Get the phone numbers and email of some of your fellow students; I have noticed that many of my most successful students study together before exams.

No phones out during my lecture, put them away. You may use them to take pictures and to search for information during labs.

How will you be graded:

4 Exams worth 100 points each	= 400 points
Lab practicals and exercises (drop lowest)	= 200 points
Final Project	= 50 points
Total points for this course	= 650 points

Grade Breakdown

A= 90% or greater

B= 80 or greater

C= 70 or greater

D= 60 or greater

F= Average of less than 60 - Don't go here!

Your final grade is a combination of your lab grade and performance on the written exams. The lab grade counts as approximately 40% of the total grade while the written exams count as 60% of your final grade.

1. Tests will be given in class and will consist of multiple choice, fill-in, matching and essay type questions - I do not give Scantron tests.
2. NO ONE is allowed to leave the room during an exam.
3. Once any student has handed in their exam and left the room, no one else will be permitted to begin their exam, show up on time!
4. You must inform me ahead of time if you are going to miss an exam, if you just do not show up for the test, you get a 0 on that exam.
5. If you are unable to take an exam for any reason, your next exam grade will be worth double the points. So, for example, if you miss exam 2, exam 3 will be worth 200 points for you.
6. It is the student's responsibility to obtain the material from missed lectures.
7. Any student caught cheating during an exam will be taken before the student conduct committee for appropriate action.

Laboratory Instructions for Dissections

THERE IS NO EATING DRINKING OR SMOKING IN THE LAB IF YOU DO YOU WILL GET A **ZERO** FOR THE LAB. NO EXCEPTIONS – EVER.

We will work with many animals that are preserved with all kinds of horrid chemicals that can kill you if you put it in your mouth.

1. You may use the metal dissection pans in the lab rooms only. DO NOT remove them from the lab. Clean your tray and put it back on the shelf. I will deduct points from your lab grade as a clean-up fee if I have to wash up your tray or station. IT IS NOT WORTH IT!
2. Obtain the following from the dissection cart:
 - a. your specimen
 - b. dissection pins
 - c. a plastic bag and an identification tag
 - d. gloves
3. Most dissections take more than 1 lab period. You may store your specimen in the designated cabinet. Seal the bags tightly.
4. Your lab manual contains the instructions for the dissection. READ IT FIRST. I will give specific instructions at the start of each lab, write them down.
5. IMPORTANT - Do not pour preservative down the sink. Pour it in the waste bottle. It is poison and not acceptable to put down the sink.
6. Your checklist sheets will be given out as we start each organism. They are also available online. Each checklist contains a list of structures that you have to identify. Use your lab book to find all of the structures. You are responsible for knowing the function of all of these structures as well as pointing them out on your specimen. Take notes next to the name of the structure on the checklist so that you can find it again. You must finish each sheet before you can take the practicum for each organism.
7. Complete your external checklist BEFORE cutting and pinning your specimen.
8. You will do a lab practical for most specimens. This may be either an oral or written quiz. Each student does this on their own (no group quizzes)! You are responsible for all of the structures on the checklist.
9. When you are done with your specimen, place the pins in the dish on the dissection cart, and discard the specimen in the biohazard bag that is located on the chart. Make sure all of the juices are poured out into the waste jar. If you are not sure, ask. Do not put anything into the trash.

Lab Exercises – detailed list

<u>Start Day</u>	<u>Topic</u>	<u>Lab Book Exercises</u>	<u>Points per Lab</u>	<u>Practicum?</u>	<u>Due Date</u>
1/27	Systematics	Handout	10	No	Jan 30 th
1/31	Porifera	Handout	5	No	Feb 6 th
1/31	Cnidaria Hydra	Handout	5	No	Feb 6 th
2/7	Platyhelmenthes Planaria Fluke Tapeworm	7 7 7	10	Yes	Feb 9 th
2/17	Mollusca Clam/Squid	9a +b	10	Yes	Feb 23 th
2/28	Annelida Earthworm	handout	10	Yes	March 6 th
3/3	Nematoda Trichinela Ascaris	8 8	10	No Yes	March 9 th
3/24	Arthropoda Crayfish Grasshopper	12 handout	10 10	Yes Yes	April 3 rd
4/7	Echinodermata Starfish	14	10	No	April 10 th
4/11	Chordata Frog- external	handout	10	Yes	April 20 st
4/14	Frog- internal	handout	10	Yes	April 20 st
4/21	Pig- external	handout	20	Yes	May 6 th
4/25	Pig-internal	handout	20	Yes	May 6 th
5/9	Owl Pellets	handout	10	No	May 8th
4/28	Field Trip	handout	20	No	May 6th

Most labs have both a practical dissection and a quiz associated with each group we cover. I will go more into detail once we start the dissections, but you will be expected to learn and identify important parts of the anatomy of each group. Each section builds on the last, so missing one whole group can really hurt you down the line.

Along with each handout or lab book section, you will be expected to complete a detailed drawing for each group. This should be turned in with the lab, and be your own work – no tracing!

Drawings for your Labs

Scientific drawings are an important part of the science of biology and all biologists must be able to produce a good drawing. This is not a test of your artistic ability, but a way of conveying visual information accurately. You may photograph your specimens, but nothing will help you learn the details of the various anatomies like completing a scientific drawing. All drawings for this course must follow the basic rules of scientific illustration.

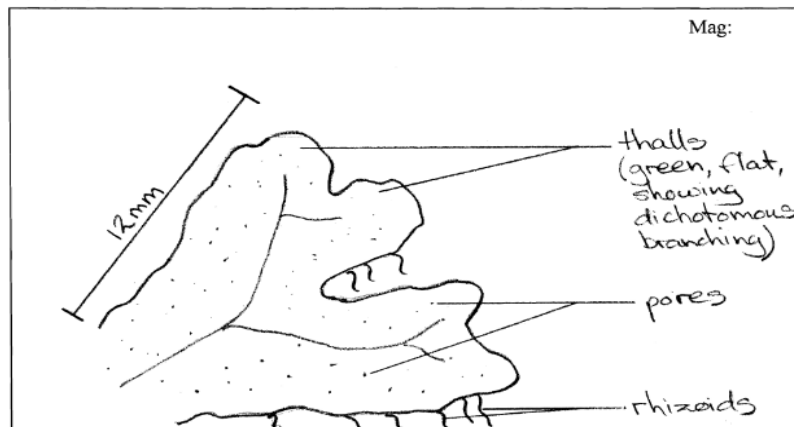
1. Drawings must be done on **white paper in pencil** – not lined, not colored, not some shabby piece that you pulled out of your trunk right before class, nice white paper. You can purchase white paper at the bookstore, or bring in sheets from home.
2. At the top of each page list the Kingdom, Phylum, and if known Class, Genus, and species.
3. Title your drawing. There should be no more than 2 drawings per page.
4. Record the magnification you viewed the specimen under if you used a scope, if not include a scale bar to show how large the specimen was.
5. Label your drawing. Each lab will have you search for various body parts and details, label all that you see on the right-hand side of the paper. The labels should all line up neatly along the side.
6. Label only what you see, not what you wanted to see.

EXAMPLES OF SCIENTIFIC DRAWINGS

Kingdom: *Plantae* Phylum: *Hepaticophyta* Class:
Order: Genus: *Marchantia* Species:

(Figure 1)

Title: Habit sketch of *Marchantia* thallus



From http://bioserv.fiu.edu/~biolab/labs/1011/supplemental_materials/Scientific%20drawings.pdf

Final Project (50 Points) DUE MAY 4th

You will work on this project throughout the semester. You may choose ONE of the following projects. These projects will help you connect some of the many topics that we look at in Bio 102.

You have a lot of freedom in how to put these together, you may present a short lecture (5 to 10 minutes), create a book (diagrams and text), or write a paper (4-5 pages). If you have other ideas please see me before you start. I had one student put together a photographic essay on insects that was remarkable but, she had the correct type of camera. Make sure that you effectively limit your project so that you have enough to work with but are not overwhelmed. Please feel free to talk to me about what you want to do, and show me your progress.

I will be happy to make recommendations and corrections at any time up until the week before the project is due. Late projects will lose 2 points per day up to a maximum of 20 points off. **No projects will be accepted after May 8th.**

You are required to properly reference everything. That means that if you look it up, check it in a book or read it online you need to say so and list where you obtained the information. The website <http://owl.english.purdue.edu/owl/resource/560/05/> is a great resource for all your referencing needs.

This project is worth 50 points.

Comparative anatomy

Compare and contrast your choice of three (3) systems that we covered (ie circulatory, excretory, nervous) between two groups (phyla or class) AND humans. What are the similarities, differences? How does the animal's structure reflect the functions of each system?

Detailed exploration of 1 group (think a phyla or class, but you may be more specific)

Include the taxa's classification, body plan and characteristics, feeding, breeding, specific adaptations and detail at least 5 subgroups for your group. Pictures and/or diagrams must be included and properly referenced. For example previous students have done a presentation on the Amphibians, sharks, and groups of jellyfish.

Bio 112 Spring 2014 Schedule

Our class meets every Monday, Wednesday, and Friday during the spring semester from **8:00-9:50 AM**. This schedule is subject to change. I will announce all changes in class. Reading chapters should be completed BEFORE class the day they are listed.

Monday	Tuesday	Wednesday	Thursday	Friday
19	20	21	22	23
MLK DAY - No Class		Introduction Review bio 111 Ch 24 –and what is a species		Ch 26 – Phylogeny and the tree of life
26	27	28	29	30
Lab on Phylogeny (handout)		Ch 32 – Origin of animal diversity		Lab on Phylogeny due Lab – The Porifera/Cnidaria
Feb 2	3	4	5	6
Ch 40 and Lab Platyhelmetes (ch 7 in lab book)		Ch 40 – Basic Principles of animal form and function-		Lab – The Porifera/Cnidaria due Lab Platyhelmetes
9	10	11	12	13
Lab Platyhelmetes due Platyhelmetes Practicum Review lab Phlya		Lecture Catch up and Review for exam 1		Exam 1
16	17	18	19	20
Lab – Mollusca – Lab book chapter 9a		Lecture Ch 41 – Animal Nutrition		Ch 41 Finish Mollusca

Monday	Tuesday	Wednesday	Thursday	Friday
23	24	25	26	27
Lab Mollusca Due Lecture Ch 42		Lecture Ch 42 – Circulation and Gas Exchange		Lab – Annelida (handout)
March 2	3	4	5	6
Lab – Annelida – finish Lab Nematoda – Lab book chapter 8		Lecture Ch 43 – The immune system		Lab – Annelida due Lab Nematoda – Lab book chapter 8
9	10	11	12	13
Ch 43 finish Annelida/ Nematoda/ Mollusca Practicum Lab Nematoda Due		Lecture Catch up and Review for exam 2		Exam 2 (Ch 41-43, Mollusca, Annelida and Nematoda)
16	17	18	19	20
Spring Break	Spring Break	Spring Break	Spring Break	Spring Break
23	24	25	26	27
Lab Arthropoda (Handouts and Ch 12 in lab book)		Lecture Ch 44 – Osmoregulation and Excretion		Lab Arthropoda
30	31	April 1	2	3
Lab Arthropoda		Lecture Ch 45 – Hormones and the endocrine system		Lecture Ch 45 Lab Arthropoda Practicum Lab Arthropoda due

Monday	Tuesday	Wednesday	Thursday	Friday
6	7	8	9	10
Lab Echinodermata (Ch 14 in lab book)		Lecture Ch 46 – Animal Reproduction		Start Vertebrates lectures (these will be at the beginning of each lab day) Lab Echinodermata due Lab Frog external (handouts)
13	14	15	16	17
Lab Frog internal (handouts) Lecture Ch 46 – Animal Reproduction		Lecture Catch up and Review for exam 3		Exam 3: Chapters 44-46, Arthropoda, Echinodermata
20	21	22	23	24
Lab Frog External and internal due Lab – External Pig (handout)		Lecture Ch 47 – Animal Development		Pig Internal pt 1
27	28	29	30	May 1
Field Trip (handout) If Rain: Pig Internal pt 2		Lecture Ch 48/49 – Neurons, Synapses, and signaling		Field Trip rain date Pig Internal pt 2
4	5	6	7	8
Last day for pigs Presentations/ final paper/project due		Field Trip write up due Pig internal and external due Review for final exam		Lab Owl Pellets Presentations (if there are some that did not go on the 5 th)
11	12	13	14	15
Final Exam Chapters 47, 48 , Vertebrates, Frog, Pig, Owl Pellets.				