

**Moravian College**  
Biology Department  
Biology 112 – General Zoology  
Spring 2010

**Instructor:** Dr. Fran Irish  
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**Office:** Collier Hall of Science – Room 321  
**Office hours:** Monday 10 a.m. – noon, Tuesday and Thursday 9 a.m. – 11 a.m., or  
by appointment.

**Lecture:** Monday, Wednesday, and Friday 8:55 a.m. – 9:45 a.m.  
Memorial Hall – Room 302

**Lab:** Section A: Tuesday 12:45 p.m. – 3:45 p.m.  
Section B: Thursday 12:45 p.m. – 3:45 p.m.  
Collier Hall of Science – Room 303

**Required Textbook:** *Integrated Principles of Zoology, 14<sup>th</sup>. Edition*, by Cleveland Hickman, Jr. et al., McGraw-Hill, 2008.

**Required Lab Manual:** *Laboratory Exercises in Integrated Principles of Zoology, 14<sup>th</sup>. Edition*, by Cleveland Hickman, Jr. et al., McGraw-Hill, 2008.

**Other required equipment:** Goggles (available at the book store, if you don't already have them), lab coats (provided), and dissection kits (also provided, but if you plan to be a biology major, you might consider purchasing your own kit at the book store), loose-leaf binder with lined and unlined paper for lab notebook.

**Course Description:** An introduction to basic concepts in biology through study of the major lineages of invertebrate and vertebrate animals, with emphasis on the ontogeny, structure, and function of organ systems in an evolutionary context. Topics covered will include basic cell structure and function, development, and phylogeny. The laboratory will focus on observation of structural-functional relationships of living and preserved representatives of the major animal phyla.

**Course Objectives:** By the end of this course, students should:

1. Understand the difference between science and non-science.
2. Be familiar with the specialized vocabulary of zoology.
3. Understand the relationship between animal structure and function.
4. Know the structural and functional characteristics of major animal groups, and be familiar with current hypotheses concerning how they evolved.

**Blackboard:** All information associated with this course---syllabus, assignments, power point presentations, customized lab exercises, useful web links, cumulative grades---will be posted on Blackboard. You must register yourself for this course on Blackboard *as soon as possible*---your opportunity to register will expire on Monday, January 25<sup>th</sup>. For instructions, see the following link: <http://home.moravian.edu/public/cit/help/blackboard/bbstudent.asp>  
The course ID is BIOL112 and the enrollment code is zoology. If you have difficulty with this, PLEASE E-MAIL ME IMMEDIATELY!

**Lecture attendance:** My lectures will generally be in the form of power point presentations, though I may decide to follow some other format if I find it more effective. I will post the power point lectures on Blackboard the day before each class so that those of you who are slow note-takers or abysmal artists will not be struggling to keep up, and all of you can attend more carefully to what I say. The lectures will be posted until the exam; then they will be removed to make room for the next set of lectures. It is your responsibility to download the lectures and print them for your use in the classroom. Please note that the power point slides will not contain everything I say---you will have to add the details if you are to have an effective study aid. THUS, tempting though it may be, you cannot sleep in and skip the lectures without penalty. If I see that attendance is dropping, I will stop posting the lectures. If you are ill, by all means stay home, but please e-mail me so I will know why you are absent. Cell phones must be turned off during lecture (this means you cannot text your friends).

I will post study questions every weekend covering the previous week's lectures. I strongly suggest that you take the time to formulate answers to these questions every week---do not try to answer them all the night before the exam.

**Lab attendance:** Don't even consider missing a lab unless you are ill or have some other emergency. Please contact me BEFORE the missed lab, and plan to submit an official excuse. IT IS THE STUDENT'S RESPONSIBILITY to arrange to make up a missed lab before the next lab quiz or practical. Be aware that it may not be possible to make up exercises involving live material, and I may not be available to guide you as I would during the scheduled lab period.

You are expected to read the assigned lab exercises BEFORE coming to lab (this includes both the assigned sections of the lab manual and the lab handouts, which will be posted on Blackboard the day before the lab). If you habitually come unprepared, you will not be able to participate in class discussions, and you will be scrambling to keep up (and your grade will suffer). Please bring your lab manual and lab notebook to every lab.

**Lab notebook:** Critical observation is absolutely essential to science. Therefore, I ask that you bring a loose-leaf binder with blank lined and unlined paper to lab. This binder will hold all lab handouts, plus your notes and drawings. The goal of this exercise is to hone your powers of observation and provide you with a useful study tool. The lab handouts will tell you what information must be included in your lab notebook, but you will receive extra credit for any extra drawings, notes, etc. that you include. Your lab notebooks will be handed in at the beginning of the second and fourth lab practicals (i.e., once in the middle of the semester, and again at the end), graded, and returned by the next lab period.

**Exams:** At the beginning of class on Fridays, there will be a short quiz (5-points) covering the lectures on Monday and Wednesday. Plan to arrive for class on time, as late arrivals will not be allowed to take the quiz, and missed quizzes cannot be made up.

Please see the lecture and lab calendars below for the exam schedule. Make-up exams will be given at the discretion of the instructor. It is the student's responsibility to contact the instructor BEFORE the missed exam, provide an appropriate excuse, and make arrangements to take the exam at another time. If you miss a lab practical, you will be required to take an oral practical. If your absence is not excused, you will receive a 0 for the missed exam. ***Absolutely no activated electronic devices will be allowed during exams (this includes cell phones, blackberries, and ipods).*** If you are seen using one of these devices for any reason during an exam, you will receive a "0."

The final lecture exam is cumulative, but weighted toward the last quarter of the course (100 points drawn from the period since the third lecture exam; 100 points drawn from the entire semester).

**Reading assignments:** You have a well-written, up-to-date textbook; unfortunately, we will not have time to discuss everything in it. The chapters that are relevant to each lecture are indicated on the lecture schedule. I expect you to scan the relevant chapter and read the chapter summary before each lecture to get a feel for the material I will be covering. After class, read the sections covered in the lecture for clarification, and amplify your lecture notes in areas you don't understand (I don't want to discourage you from reading the entire chapter, but if your time is limited, you may opt to forego this pleasure). There is an excellent summary at the end of each chapter, and useful questions to test your understanding. I recommend that you also use the on-line study materials provided for the textbook (these include flashcards that are quite useful for vocabulary---and there will be lots of vocabulary). The link is posted on Blackboard; just click on the link to go to the textbook website.

**Grading:** Your scores for lecture quizzes, exams, lab practicals, and the lab notebook will be posted on Blackboard, so you can see how you are doing at any time (see below). There will be no extra credit options beyond the occasional extra question or two on exams, so please focus your energy on what we are doing in class and lab. If you find yourself falling behind, or you are struggling to learn the material, *please contact me right away.* I am here to help you.

Three lecture exams (100 points each)	300 points
12 lecture quizzes (5 points each)	60 points
Final lecture exam (cumulative)	200 points
3 lab practicals (50 points each)	150 points
Final lab practical (100 points)	100 points
Lab notebook	50 points
Class participation*	<u>20 points</u>
	<b>880 points</b>

\*Class participation includes attendance, preparation, participation in discussions, and completion of all assignments.

Grading scale: The grading scale will be posted following the first lecture exam.

To compute your grade at any time: Find the total number of points you have earned (on Blackboard) and divide by the total number of points possible (also on Blackboard) to get a percentage. Use the posted grading scale to find your grade. [If you have missed a quiz and I have accepted your excuse, remember to subtract 5 points from the total possible. If you have

missed more than one quiz and not contacted me about it, assume you have received a "0".] Please note that I may exercise qualitative judgment in determining your grade. Students are expected to abide by the college policy on intellectual Honesty (see Student Handbook).

## LECTURE SCHEDULE

Week	Lecture topic	Reading assignment
January 18-22*	Introduction: The big questions Chemistry of life Origin & early evolution of living systems	Chapter 1 Chapter 2 Chapter 3
January 25-29*	The cell, mitosis, meiosis Development Development & body architecture	pp. 137-146 Chapter 8 Chapter 9
February 1-5*	Systematics Protozoa Protozoa	Chapter 10 Chapter 11 Chapter 11
February 8-12*	<b>EXAM</b> (100 points) Porifera Cnidaria	Chapter 12 Chapter 13
February 15-19*	Cnidaria & Platyhelminthes Platyhelminthes Rotifera, Gastrotricha, Mollusca	Chapters 13 & 14 Chapter 14 Chapters 15 & 16
February 22-26*	Mollusca Annelida Annelida & Nematoda	Chapter 16 Chapter 17 Chapters 17 & 18
March 1-5*	Review for exam <b>EXAM</b> (100 points) Arthropods: chelicerates, myriapods	Chapter 19
March 8-12	NO CLASSES: SPRING BREAK	
March 15-19*	Arthropods: crustacea Arthropods: hexapoda Echinoderms	Chapter 20 Chapter 21 Chapter 22
March 22-26*	Hemichordates & Protochordates Origin of vertebrates	Chapter 22 & 23 Chapter 23

	Fishes	Chapter 24
March 29-Apr 2	Amphibians & reptiles Birds & mammals NO FRIDAY LECTURE---EASTER BREAK	Chapter 25 & 26 Chapter 27 & 28
April 5-9	NO MONDAY LECTURE---EASTER BREAK Begin evolution <b>EXAM</b> (100 points)	Chapter 6
April 12-16*	Evolution Support, protection, & movement Homeostasis	Chapter 6 Chapter 29 Chapter 30
April 19-23*	Circulation Respiration Digestion	Chapter 31 Chapter 31 Chapter 32
April 26-30*	Nervous system Special senses	Chapter 33 Chapter 33
	Ecology	Chapter 38

**WEDNESDAY, MAY 5----FINAL LECTURE EXAM----1:30 pm**

\* 5-point quiz on Friday covering Monday and Wednesday's lectures.

*Please note: Lecture and lab syllabi outline the topics I hope to cover in the order I hope to cover them, but I may make changes as we progress through the semester.*

## **LABORATORY SCHEDULE**

<b>Week</b>	<b>Laboratory topic</b>	<b>Laboratory exercise</b>
January 19-21	Introduction, Safety Microscopy, the cell, mitosis	Handout Exercises 1, 2
January 26-28	Meiosis, Development	Exercise 3
February 2-4	<b>LAB PRACTICAL</b> (50 points) Protozoans	Exercise 6
February 9-11	Sponges Cnidarians	Exercises 7, 8
February 16-18	Flatworms Molluscs	Exercises 9, 11
February 23-25	<b>LAB PRACTICAL</b> (50 points) Nematodes, Gastrotrichs, Rotifers	Exercise 10
March 2-4	Annelids, Myriapods, Chelicerates	Exercise 12, 13, 15A
March 9-11	<b><i>NO LAB---SPRING BREAK</i></b>	
March 16-18	Crustaceans, Insects	Exercises 14, 15B
March 23-25	Echinoderms protochordates	Exercises 16, 17
March 30-Apr 1	<b>QUIZ</b> (25 points) Vertebrate skeletal diversity	Handout in lab
April 6-8	Vertebrate tissues	Exercise 4
April 13-15	Fetal pig: skinning and muscles	Exercises 22A,B
April 20-22	Fetal pig: digestive, circulatory, urogenital systems	Exercises 22C-E, G
April 27-29	<b>FINAL LAB PRACTICAL</b> (100 points)	

## TIPS FOR DOING WELL IN THIS COURSE:

### Lecture exams:

1. Attend all lectures, download the powerpoints, and print them out before class.
2. Review the material for each lecture before coming to class.
3. Do not fall behind---review and annotate your lecture notes, using the text to clarify things you do not understand. If the text cannot help you, please ask me. My opinion of you will not plummet if you ask a question, so don't be shy.
4. Answer the study questions each weekend.
5. You are responsible for knowing the material I present in lecture---do not try to memorize the textbook.

### Lab practicals:

1. Attend all labs.
2. Prepare for the labs by reading all of the required material.
3. Do not try to race through the lab exercises---be sure you understand what you are supposed to see, and be sure you have actually seen it before you leave. If you are confused, ask questions---I am there to help you!
4. Come to the "open lab" sessions before the lab practicals, and prepare by making a list of the things you need to clarify. Listen to the other students---they may ask things you didn't think about.

### Vocabulary:

1. The single greatest barrier to learning zoology is the vocabulary, which may seem like a foreign language. Do whatever you need to do to learn the terminology----flashcards, glossaries, diagrams, study groups, etc.