

Moravian College
Biology Department
Biology 310 – Mammalian Anatomy
Fall 2009

Instructor: Dr. Fran Irish
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Office: Collier Hall of Science – Room 321
Office hours: Monday and Friday 11:30 a.m. – 1:00 p.m., Thursday 9 a.m. – 10 a.m., or by appointment.

Lecture: Monday, Wednesday, and Friday 10:20 a.m. – 11:10 a.m.
Priscilla Payne Hurd Academic Complex – Room 330

Laboratory: Wednesday 1:15 p.m. – 4:15 p.m.
Collier Hall of Science – Room 302

Required Textbook: *Vertebrates: Comparative Anatomy, Function, Evolution, 5th. Edition*, by Kenneth V. Kardong, 2008.

Required Lab Manual: *Comparative Vertebrate Anatomy: A Laboratory Dissection Guide, 5th. Edition*, by Kenneth V. Kardong and Edward Zalisko, 2008.

Other required equipment: dissection kit (bookstore), goggles (bookstore, if you don't have them already), lab coats (provided), loose-leaf binder with lined and unlined paper for lab notebook.

Course Description: This course explores the ontogeny, structure, and function of vertebrate animals in an evolutionary context. Emphasis is placed on the form/function relationship, the evolution of anatomical specialization, and the comparative approach to hypothesis testing. Laboratory exercises examine the structural diversity of vertebrate organ systems through dissection of protochordates, the lamprey, dogfish shark, mudpuppy, and cat. Principles learned in this course will provide a strong foundation for students going on to a graduate or professional school that will require them to learn human anatomy.

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

1. Know the current views on the origin of vertebrates.
2. Recognize the basic body plan common to all vertebrates due to shared ancestry.
3. Be familiar with the major vertebrate clades and their diverse adaptations.
4. Be able to identify and provide a basic description of how major vertebrate organ systems function.
5. Know basic anatomical terms and descriptors.
5. Attain proficiency in observational skills and the art of dissection.

Prerequisites: Biology 112, or instructor's permission.

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 (see attached instruction sheet; the web address is: <http://blackboard.moravian.edu/>). Please note that your opportunity to register will expire on Saturday, Sept. 5th. If you have difficulty with this, PLEASE E-MAIL ME IMMEDIATELY!

Course expectations

Lecture Attendance: If you wish to do well in this class, you must be here. The lecture format will vary, depending on the subject matter and what seems to be the most effective way to get the message across. Most of the time, lectures will be in the form of power point presentations, which I will post on Blackboard after 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. HOWEVER, the power point slides will not contain everything I say---you will still have to take notes during class if you are to have an effective study aid. THUS, you cannot skip the lectures without jeopardizing your grade, either directly (by lowering your class participation grade) or indirectly (by leaving you behind in the dust). 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).

Lab Attendance: Don't even consider missing a lab unless you are ill or have some other emergency. If you do miss a lab, you must arrange to make it up before the next lab quiz or practical. Be aware that I will not be able to help you through the dissections as I would during the scheduled lab period.

You are expected to read the assigned lab exercises BEFORE coming to 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. Your lab notebooks will be handed in at the beginning of each lab practical (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 (except during weeks when lecture exams or lab practicals are scheduled), 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.

If you miss a lecture exam, lab quiz, or lab practical, you cannot make it up. If you have a legitimate excuse (illness or emergency), you must notify me BEFORE the exam. In that case, the missed exam score will be dropped, and your grade will be computed on the basis of the exams you have completed. If your absence is not excused, you will receive a 0 for the missed exam, and that 0 will be included in the computation of your final grade.

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).

Absolutely no activated electronic devices will be allowed during exams (this includes cell phones and ipods).

Reading assignments: The chapters that are relevant to each lecture are indicated on the lecture schedule. I expect you to scan the relevant chapter 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). Please note Appendix C: Greek and Latin combining forms; this will help make sense of anatomical terminology. I recommend that you also use the on-line study materials provided for the textbook.

Grading: After the first lecture exam, your grades will be posted on Blackboard, so you can see how you are doing at any time. 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.

This is my current vision of how the points in this course will be distributed:

3 lecture exams (100 points each)	300 points
10 lecture quizzes (5 points each)	50 points
Final lecture exam (cumulative)	200 points
2 lab quizzes (25 points each)	50 points
2 lab practicals (100 points each)	200 points
Laboratory notebook	100 points
Class participation*	<u>50 points</u>
	950 points

*Class participation includes attendance, preparation, and participation in discussions.

I use the conventional grading scale: 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, below 60 = F. Please note that the instructor may exercise qualitative judgment in determining your grade.

Academic Honesty: Students are expected to abide by the college policy on intellectual Honesty (see Student Handbook).

LECTURE SCHEDULE

Week	Lecture topic	Text reading
August 31*	Introduction Evolution and Phylogeny Paleontology	Chapter 1
September 7*	NO CLASS – LABOR DAY Protochordates Origin of vertebrates	Chapter 2
September 14	Vertebrate diversity: fishes Tetrapods LECTURE EXAM I	Chapter 3
September 21*	Integument Ontogeny	Chapter 6 Chapter 5
September 28*	The skull Teeth	Chapter 7 Chapter 13
October 5*	Axial skeleton Appendicular skeleton	Chapter 8 Chapter 9
October 12	<i>NO CLASS – FALL BREAK</i> LECTURE EXAM II	
October 19*	Muscles	Chapter 10
October 26*	Digestive systems	Chapter 13
November 2*	Respiratory systems Circulatory systems	Chapter 11 Chapter 12
November 9	Urogenital systems LECTURE EXAM III	Chapter 14
November 16*	Nervous systems: PNS	Chapter 16
November 23	Nervous systems: CNS <i>NO CLASS – THANKSGIVING</i>	Chapter 16
November 30*	Sensory organs	Chapter 17
December 7	Endocrine system	Chapter 15
DECEMBER 17	FINAL LECTURE EXAM—1:30 – 4:30	

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

LABORATORY SCHEDULE

Week	Laboratory topic	Laboratory exercise
August 31	Introduction Safety & microscopes What is a chordate?	Handout Exercise 1
September 7	Origin of Vertebrates: protochordates and lamprey	Exercise 2, 3
September 14	The vertebrate integument	Exercise 4
September 21	QUIZ (25 points) Skeletal tissues Axial and appendicular skeleton	Exercise 5, pp. 40-66
September 28	Skull	Exercise 5, pp. 66-86
October 5	Muscles: shark, <i>Necturus</i>	Exercise 6, pp. 87-103
October 12	Muscles: the cat	Exercise 6, pp. 103-129
October 19	PRACTICAL (100 points) Muscles of the cat, continued	
October 26	Digestive system	Exercise 7
November 2	Circulatory and respiratory systems	Exercise 8
November 9	Urogenital systems	Exercise 9
November 16	QUIZ (25 points) Begin nervous systems	Exercise 10
November 23	<i>NO LAB– THANKSGIVING</i>	
November 30	Finish nervous systems Sheep brain	Exercise 10 Handout
December 7	FINAL LAB PRACTICAL (100 points)	

Please note: this syllabus acquaints you with 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. I will give you fair warning, and all changes will be posted.