BIOLOGY 330L – COMPARATIVE ANATOMY OF THE VERTEBRATES

Instructors:

The Professor for the course is Professor Kathleen Smith (kksmith@duke.edu). Dr. Vickie Eason (vkeason@duke.edu) is the laboratory manager and an instructor. Your TAs are Ken McKenna (kenneth.mckenna@duke.edu) on Tuesday and Mercy Akinyi (mercy.akinyi@duke.edu) on Wednesday.

Lectures will be held in room 113 Biosci. Labs will be in room 073 Biosci.

Textbook:

Functional Anatomy of the Vertebrates by Karel Liem, Willie Bemis, Warren Walker and Lance Grande, *Third Edition*. The schedule below gives you information on which chapter is applicable to each lecture or lab; in lecture we will give you specific pages for particular focus. The textbook is intended to supplement and reinforce material presented in the lectures and laboratories.

Laboratory dissection manual:

Your laboratory manual will be ***The Dissection of the Vertebrates*** by Gerardo Deluliis and Dino Pulera. This book will be very useful as a reference during lab and as a study aid. Your specific lab activities will be based on handouts that will be posted on the Sakai website each week. This guide is also available as an ebook at the Duke University library. We expect each pair of students to have a hard copy of this book to bring to lab.

Other supplies:

We will provide dissection tools and gloves for your use during lab. You will be required to wear eye protection during many of the labs and if you do not wear glasses you can either use goggles we have available or may bring your own. You may wish to wear protective clothing (lab coat or “scrub” top) to lab when we do dissection, but this is not necessary. It is safer to wear closed toed shoes; please be sensible.

Please bring paper and pencils (including an array of colored pencils or markers) for drawing and taking notes in lab. You will each have a drawer to store such materials. In addition you probably will want to have colored pencils or pens to use during lecture.

Lab policy, grading policy and other information:

Please see separate “grading guidelines” handout for information on exams, assignments, policies regarding grading, missed classes and academic honesty. The Sakai website is a critical part of the course, so please plan on checking it frequently. On this site we will post further information on grades, exams, lab policy and so forth, as well as all important announcements. You should in particular plan to check into the “active syllabus” on the Sakai website for important information several times a week.

Course Schedule

Week	Date	Lecture 113 Biosci (T & Th – 10:05 – 11:20)	Lab 073 Biosci (T or W 1:40 – 5:10)	Reading
1	Aug. 30	1 Introduction to comparative biology; who are the vertebrates?		Chapter 1
			1 Phylogeny and comparative biology	Chapter 1
	Sept 1	2 Origin of vertebrates; early evolutionary history		Chapters 2 & 3
2	Sept 6	3 Diversification of vertebrates; adaptations to life on land		Chapter 3
			2 The vertebrate body; lamprey	Chapters 2 & 3
	Sept 8	4 The basics of the vertebrate body: development and the pharyngula stage		Chapter 4
3	Sept 13	5 The integument & connective tissues		Chapter 6
			3 Integument and connective tissues; introduction to vertebrae	Chapters 6 & 8
	Sept 15	6 The vertebral column and axial skeleton		Chapter 8
4	Sept 20	7 The evolution of limbs; limb skeletons in vertebrates		Chapter 9
			4 Vertebrate axial and limb skeleton **Lab quiz 1 (10 points)**	Chapters 8 & 9
	Sept 22	8 Intro to the muscular system; limb muscles		Chapter 10
5	Sept 27	9 Locomotion on land **Paper review 1 due.**		Chapter 11
			5 Hind limb muscles: structure, function and leverage	Chapters 5, 9 & 10
	Sept 29	10 Locomotion in fluids – air and water		Chapter 11

6	Oct 4	**Midterm 1**		
			6 Forelimb anatomy	Chapters 5, 9, & 11
	Oct 6	11 Respiratory systems 1: Introduction and overview		Chapter 18
7	Oct 11	**FALL BREAK**		Chapter 18
			7 Thorax, great vessels and lungs **Lab quiz 2 (15 points)**	Chapter 18 & 19
	Oct 13	12 Respiration 2: lungs, and comparative patterns		Chapter 19
8	Oct 18	13 The heart and circulation 1: heart structure and function		
			8 Heart anatomy and function	Chapter 19
	Oct 20	14 the heart and circulation 2: evolution of circulatory systems		Chapter 5
9	Oct 25	15 Cranial skeleton – evolution and basic plan		Chapter 7
			9 Evolution of the skull **Lab quiz 3 (15 points)**	Chapter 7
	Oct 27	16 Evolution of jaws and teeth and cranial muscles – mammalian feeding		Chapter 7, 16
10	Nov 1	17 Functional morphology of feeding		Chapter 16
			10 Mammalian masticatory system	Chapter 7
	Nov 3	18 Branchial arches and neural crest; head segmentation **Paper review 2 due**		Chapter 4, 7

11	Nov 8	**Midterm 2**		
			11 Mammalian skull evolution	Chapter 7
	Nov 10	19 Introduction to the brain		Chapter 12 - 14
12	Nov 15	20 Peripheral and cranial nerves		Chapter 13
			12 The brain and cranial nerves **Lab quiz 4 (15 points)**	Chapters 12 - 14
	Nov 17	21 The mammalian brain		Chapter 14
13	Nov 22	22 Vertebrate sensory systems		Chapter 12
			No lab	
	Nov 24	**Thanksgiving break**		
14	Nov 29	23 Guts and digestion		Chapter 17
			13 The mammalian brain	Chapter 14
	Dec 1	24 Renal systems and excretion		Chapter 20
15	Dec 6	25 Reproductive systems **Paper review 3 due**		Chapter 21
			14 Digestive, renal and reproductive systems	Chapters 17 & 20
	Dec 8	26 Reproductive strategies and systems; reproduction in mammals		Chapter 21
	Monday, December 19 – 2 - 5 pm.		**Final exam (written and laboratory) (*we hate this time slot as much as you do*)**	