

## **Functional Vertebrate Anatomy (ZOO 3713C), Fall 2014**

**Lectures:** Monday, Wednesday, Friday, 8.30am - 9.20am (period 5)

**Location:** Fine Arts B, Rm 103

**Laboratories:** Monday to Wednesdays, 1.55 - 6.00 pm (periods 7-10)

Section 051D Monday

Section 1A24 Tuesday

Section 4623 Wednesday

**Location:** Rm109 Carr Hall (Biology Department)

### **Course Description and Objectives:**

A thorough understanding of Vertebrate anatomy is essential for appreciation of many fields of biology, including whole organism biology, molecular and cellular biology, paleontology, evolutionary development, biomechanics, sports therapy, medicine and veterinary medicine. This course presents a functional perspective of comparative vertebrate anatomy, taking advantage of both the diversity and conservation of morphological structure in the animal kingdom to increase appreciation for how form can dictate function of select organ systems and of the organism as a whole. Form is studied not only at the anatomical level but also at the cellular and molecular level as well as at the developmental level as these are the basic building blocks on which anatomy is moulded. The organisms studied are the Chordates which range from Tunicates to Mammals.

Three-weekly lectures and the once-weekly laboratories are intended to be mostly co-ordinated such that the laboratory work solidifies and expands upon what is discussed in the lectures and reinforces anatomical terminology, structure and form. The systems covered include all the major components of the vertebrate body and the understanding of these systems is achieved by lectures, dissection, examinations of prepared tissues, histological studies and practical work.

**Course requirements:** Consistent and punctual attendance to all parts of the course is expected and required and a component of the marks is specifically laid aside for this. There will be a total of three non-cumulative examinations on the lecture material spaced out during the course with the third examination during finals week and these examinations will be multiple choice. There are also several quizzes during the laboratory periods which all contribute towards the final grade as well as two lab exams. There is also a short essay required on a topic of contemporary interest in biology.

### **Instructor:**

Malcolm Maden

Professor

Department of Biology

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Office Hours: Wednesdays, 10 -11.30 AM

### **Teaching Assistants:**

Luciano Soares – [Isoares@ufl.edu](mailto:Isoares@ufl.edu)

Pauline Fontaine – [pfontaine@ufl.edu](mailto:pfontaine@ufl.edu)

### **Required Texts:**

*Functional Anatomy of the Vertebrates: An Evolutionary Perspective*

by K.F. Liem, W.E. Bemis, W.F. Walker and L. Grande, 3rd Edition, Brooks Cole, 2001.

*Mammalian Anatomy: The Cat*

by A.M. Sebastiani and D.W. Fishbeck, 2<sup>nd</sup> Edition, Morton Publishing Company, Colorado, 2005.

*Lab manual: Zoology 3713 Lab Manual, Fall 2014*

### **Lectures, Handouts and Supplemental Readings:**

Lectures will be posted on the course website on Sakai at least the day before class and it is expected that you will either print the appropriate handouts and bring them to class with you or follow them on Sakai and they will be available there for revision. Papers for the short essay will be posted the previous week.

Handouts and readings for the lab will be posted on the course website. Laboratory handouts will be posted by Thursday of the preceding week. Several pre-lab quizzes will be conducted on the Sakai website.

### **Examinations and Grading:**

Final grades will be determined as a combination of exams, quizzes, attendance at both lecture and lab, and participation in the course. It is very difficult to learn when one is not engaged and actively interacting with one's peers and with the instructors.

Exams 1, 2 and 3 @ 200 each	600
Short essay/questions	100
Lab	260
Attendance and Participation	40
<b>Total</b>	<b>1000</b>

## LECTURE SCHEDULE FALL 2014 (subject to change)

WEEK	LECTURE	DATE	TOPIC	READING (textbook)
1	1	25th Aug Mon	Introduction	Ch 1
	2	27th Aug Wed	Chordates, Craniates & Vertebrates	Ch 2, 3
	3	29th Aug Fri	Integumentary System I	Ch 6
2		1st Sept Mon	HOLIDAY (Labor Day)	
	4	3rd Sept Wed	Integumentary System II	Ch 6
	5	5th Sept Fri	Development I	Ch 4
3	6	8th Sept Mon	Development II	Ch 4
	7	10th Sept Wed	Evolution & Development	Ch 4
	8	12th Sept Fri	Connective tissues	Ch 5
4	9	15th Sept Mon	Skeleton, cranial	Ch 7
	10	17th Sept Wed	Skeleton, axial	Ch 8
	11	19th Sept Fri	Skeleton, appendicular	Ch 9
5	12	22nd Sept Mon	Evolution of limbs - the fin to limb transition	Ch 9
		24th Sept Wed	Revision session	
		26th Sept Fri	<b>EXAM I</b> (in classroom)	
6	13	29th Sept Mon	Muscle structure, skeletal	Ch 10
	14	1st Oct Wed	Muscle structure, cardiac, smooth, evolution of axial muscles	Ch 10
		3rd Oct Fri	no lecture	
7	15	6th Oct Mon	Evolution of cranial muscles	Ch 10
	16	8th Oct Wed	Digestive I teeth, jaws	Ch 10
	17	10th Oct Fri	Digestive system II	Ch 17
8	18	13th Oct Mon	Digestive system III	Ch 17
	19	15th Oct Wed	Respiratory system I	Ch 18
		17th Oct Fri	HOLIDAY (Homecoming)	
9	20	20th Oct Mon	Respiratory system II	Ch 18
	21	22nd Oct Wed	Circulatory system I	Ch 19
	22	24th Oct Fri	Circulatory system II	Ch 19
10		27th Oct Mon	Revision session	
		29th Oct Wed	<b>EXAM II</b> (in classroom)	
	23	31st Oct Fri	Excretory system	Ch 20

11	24	3rd Nov Mon	Osmoregulation	Ch 20
	25	5th Nov Wed	Reproduction	Ch 21
		7th Nov Fri	no lecture	
12	26	10th Nov Mon	Reproduction & hormones	Ch 21
	27	12th Nov Wed	Endocrine system I	Ch 15
	28	14th Nov Fri	Endocrine system II	Ch 15
13	29	17th Nov Mon	Nervous system	Ch 13
	30	19th Nov Wed	Sensory systems, spinal cord	Ch 13
	31	21st Nov Fri	Sensory systems, cranial nerves	Ch 13
14		24th Nov Mon	Assignment essay	
		26th Nov Wed	HOLIDAY (Thanksgiving)	
		28th Nov Fri	HOLIDAY (Thanksgiving)	
15	32	1st Dec Mon	Sensory systems, eye	Ch 12
	33	3rd Dec Wed	Brain evolution	Ch 14
	34	5th Dec Fri	Stem cells	
16	35	8th Dec Mon	Regeneration of tissues	
		10th Dec Wed	Reading days	
		12th Dec Fri	Reading days	
17		15th Dec Mon	<b>Final exam week</b>	
		17th Dec Wed	<b>Final exam week</b>	
		19th Dec Fri	<b>Final exam week</b>	

## ZOO 3713: FUNCTIONAL VERTEBRATE ANATOMY

Fall 2014

### LAB SCHEDULE

DAYS	MATERIAL COVERED	
<b>QUIZ/EXAM</b>		
25 - 27 Aug	Origin & Evolution of Vertebrates; Integument	
1-3 Sept	NO LAB	
8 - 12 Sept	Embryology	<b>QUIZ</b>
15 - 17 Sept	Cranial Skeletal System	
22 - 24 Sept	Axial & Appendicular Skeletal System	<b>QUIZ</b>
29 - 1 Oct	Muscular System (superficial muscles)	<b>QUIZ</b>
6 - 8 Oct	Muscular system (deep muscles)	
13 – 15 Oct	Reviews and Exam 1	<b>EXAM</b>
20 - 22 Oct	Digestive/Respiratory Systems	
3 - 5 Nov	Circulatory System 1	<b>QUIZ</b>
10 - 12 Nov	NO LAB	
17 - 19 Nov	Circulatory System 2/Urogenital System	
24 - 26 Nov	NO LAB	
1 - 3 Dec	Nervous & Sensory Systems	<b>QUIZ</b>
8 - 10 Dec	Reviews and <b>Exam 2*</b>	<b>EXAM</b>

\*Reviews are generally held during regular lab hours. Exams are held on Thursday evenings. Schedule subjected to revision.

#### TEACHING ASSISTANTS:

Luciano Soares – lsoares@ufl.edu

Pauline Fontaine – pfontaine@ufl.edu

**REQUIRED TEXTS:** Bring to lab every class.

- Zoology 3713 Lab Manual, Fall 2014. Additional readings and handouts will be posted on the course website on Sakai. These will be posted by Thursday of the preceding week.

-Sebastiani & Fishbeck 2005. Mammalian Anatomy of the Cat

**OPTIONAL TEXT:**

-Kardong & Zalisko 1998. Comparative Vertebrate Anatomy. A Laboratory Dissection Guide. McGraw-Hill.

**REQUIRED EQUIPMENT:**

-Blunt forceps, blunt probe, sharp probe, scissors, scalpel. Lab coats, aprons, and colored pencils optional. **DISSECTING EQUIPMENT IS NOT SUPPLIED IN LAB.**

Gloves are provided.

**GRADING:** Lab grade is worth 30% of the total course grade.

Exam 1: 40 points

Exam 2: 40 points

Quizzes will be given at the beginning of a lab as specified above In the timetable and will be based on the material from the previous labs (5 @ 20 points each): 100 points

Pre-lab quizzes - 8 pre-quizzes based on laboratory reading/pre-lab instructions/videos will be administered via Sakai during the 3 days prior to the lab (except the first one). Each is worth 10 points, total  $8 \times 10 = 80$ .

Dissection participation/lab attendance: 40 points

TOTAL = 300 points

**Lab sections are:**

**Monday through Wednesday 1:55-6pm (periods 7-10)**