

BIOLOGY 3140-COMPARATIVE VERTEBRATE ANATOMY

Professor: Curt Walker, Ph.D. Spring Semester 2014, 3 credits

Lecture section 1, **26729**, Science 127, at 1-1:50 p.m. MWF

Office: 124 Science Building; phone ext: 652-7785

Office hours: MWF @ 10–10:50 a.m., R @ 2-4 p.m.

Textbook: Functional Anatomy of the Vertebrates: An Evolutionary Perspective, 3rd ed., by Liem et al.

Who Should Take this Course: BIOL 3140 is intended for life science majors; the course explores the details of vertebrate evolution. It is the student's responsibility to ascertain that this course is acceptable in his/her program of study. Students enrolling in the course must have successfully completed BIOL 1610/1615.

Cheating: Unfortunately this is becoming a problem at Dixie State College as we continue to grow dramatically. Cheating will not be tolerated in any form, including plagiarism, using stolen tests for study, copying the answers of another during a test, or informing other students of test contents before they've taken the exam. I will try to have any cheaters dismissed from the college; obviously they will fail the course and not be allowed to register for the course again. Identities of students who report others for cheating will remain anonymous.

Course Objectives: All students registered for the course will be assumed to have great familiarity with the basic principles of biology and evolutionary theory. This course is designed to give students a background in vertebrate design, helpful for careers in biological research, health sciences, wildlife studies, or biological education. Comparative anatomy is a fascinating but difficult subject; students should be aware that the course will be very rigorous, demanding large amounts of time and concentration. After successful completion of this course, the student will be able to, through testing, written or oral reports:

... demonstrate basic knowledge of the evolutionary changes that have occurred over the approximate 500 million year history of animals with backbones;

... demonstrate detailed understanding of the evolution of nervous, endocrine, muscular, circulatory, respiratory, excretory, immune, digestive, and skeletal systems of the vertebrates, with emphasis on fish, amphibians, birds, "reptiles," and mammals;

... demonstrate a clear understanding of vertebrate phylogeny, including characters that determine major monophyletic groups;

... demonstrate an understanding of vertebrate biomechanics, including how different groups have evolved different means of feeding and locomotion.

Grading Scale:

93-100% = A (4.0)	80-82.99% = B- (2.7)	67-69.99% = D+ (1.4)
90-92.99% = A- (3.7)	77-79.99% = C+ (2.4)	63-66.99% = D (1.0)
87-89.99% = B+ (3.4)	73-76.99% = C (2.0)	60-62.99% = D- (0.7)
83-86.99% = B (3.0)	70-72.99% = C- (1.7)	59% or less F (0)

At any time, the student may request a discussion of his/her grade in the course.

It is the student's responsibility to request grade information, which is always available.

Disabilities: If you are a student with a medical, psychological, or learning disability, or think you might have a disability and would like accommodations, contact the Disability Resource Center (652-7516) in the Student Services Center. The Disability Resource Center staff will determine eligibility of the student requesting special services and determine the appropriate accommodations related to their disability.

Attendance: Students are responsible for all material presented in lectures. Excused absences must be pre-arranged. It is inappropriate to bring children to class, and Dixie State College policy prohibits this practice.

Extra Credit: Consists of daily quizzes, which normally will not be handed in. However, 10 of these quizzes will be (unannounced) worth 5 extra credit points each, for a total of 50 possible points of extra credit.

Exams: Four exams will be given, in addition to a comprehensive final exam. Questions will include fill-in-blank, multiple choice, and short essays. **Each exam, including the final, is worth 200 points, for a total of 1000 points possible.** Missing an exam is strongly discouraged; makeup exams will occasionally be given, but 20 points per day will be deducted from the score. Exams are taken in the Testing Center. **Unless prior arrangements are made, 20 pts/day are deducted for exams taken late. No exceptions.**

My exam scores: Exam 1: _____/200, _____% Quizzes:
 Exam 2: _____/200, _____%
 Exam 3: _____/200, _____%
 Exam 4: _____/200, _____%
 Final: _____/200, _____%
 Total: _____/1000, _____%

LECTURE SCHEDULE

Minimum Reading:

M	1/6	Course Introduction, Chapter 1: Course organization, concepts, definitions	1-27
W	1/8	Chapter 2, 3: Chordate relationships	28-59
F	1/10	Chapter 3: Fish to mammals	59-117
M	1/13	Chapter 4: Ontogeny and phylogeny	118-139
W	1/15	Chapter 4: Ontogeny cont'd	140-176
F	1/17	Chapter 5: Form and Function, read Chapter 7: Cranial skeleton evolution	177-206, 250-258
W	1/22	Cranial skeleton continued (Exam 1)	258-268
F	1/24	Chapter 8: Axial skeleton	269-293
M	1/27	Chapter 6: Integument, read Chapter 9: Appendicular skeleton	208-231 294-314
W	1/29	Chapter 10: Muscular system, read Chapter 11: How locomotion occurs	327-350 351-376
F	1/31	Chapter 11: Jumping, gliding, flying	376-393
M	2/3	Chapter 11: Jumping, gliding, flying	376-393

W	2/5	Chapter 12: Sense organs	397-411
F	2/7	Chapter 12: Hearing	411-422
M	2/10	Chapter 12: Vision	422-436
W	2/12	Chapter 13: Basic NS organization	437-450
F	2/14	Chapter 13: Spinal cord schematic (Exam 2)	450-456
W	2/19	Chapter 13: Cranial Nerves	456-466
F	2/21	Chapter 13: Autonomic nervous system	466-472
M	2/24	Chapter 14: Brain evolution	473-482
W	2/26	Chapter 14: Telencephalon, trends	483-490
F	2/28	Chapter 14: Mammalian Pathways	490-503
M	3/3	Chapter 15: Endocrine glands introduction	504-515
W	3/5	Chapter 15: Endocrine glands concluded	515-529
F	3/7	Chapter 16: Mouth and feeding: intro, teeth	532-540
M	3/17	Chapter 16: Mouth and feeding	540-556
W	3/19	Chapter 17: Digestion (Exam 3)	557-574
F	3/21	Chapter 17: Digestion continued	557-574
M	3/24	Chapter 18: Fish respiration	575-584
W	3/26	Chapter 18: Fish respiration continued	584-589
F	3/28	Chapter 18: Tetrapod respiration	589-602
M	3/31	Chapter 19: Circulatory system evolution: roots	603-613
W	4/2	Chapter 19: Arteries: amphibians to mammals	613-623
F	4/4	Chapter 19: Circulation: veins and lymph	623-631
M	4/7	Chapter 20: Kidneys: Origins	633-639
W	4/9	Chapter 20: Kidneys in Fish (Exam 4)	639-645
F	4/11	Chapter 20: Kidneys on Land	645-654
M	4/14	Chapter 21: Reproduction: General background	655-667
W	4/16	Chapter 21: Reproductive duct evolution thru birds	667-675
F	4/18	Chapter 21: Reproduction in mammals	675-682
M	4/21	Chapter 26: Reproductive hormones	682-691
W	4/23	Chapter 22: CONCLUSION	694-703

FINAL EXAM: Noon-2 p.m. Friday, April 25th. Penalty for missing final exam: course failure. No early exams will be given without dean's permission.

BIOLOGY 3145-COMPARATIVE VERTEBRATE ANATOMY LABORATORY

Professor: Curt Walker, Ph.D. Spring Semester 2014, 1 credit

Lab section 1, **26730**, Science 204, 11-1:50 p.m. R

Dr. Walker's Office: 124 Science Building; phone ext: 652-7785

Office hours: MWF @ 10-10:50 a.m., R @ 2-4 p.m.

Required text: Manual of Vertebrate Dissection: Comparative Anatomy by Fishbeck and Sebastiani, 2nd ed.

This course is intended for life science/health science majors, and explores the details of human physiological processes in a laboratory setting. It is the student's responsibility to ascertain that this course is acceptable in his/her program of study.

Grading Scale:

93-100% = A (4.0)	80-82% = B- (2.7)	67-69% = D+ (1.4)
90-92% = A- (3.7)	77-79% = C+ (2.4)	63-66% = D (1.0)
87-89% = B+ (3.4)	73-76% = C (2.0)	60-62% = D- (0.7)
83-86% = B (3.0)	70-72% = C- (1.7)	59% or less F (0)

At any time, the student may request a discussion of his/her grade in the course.

It is the student's responsibility to request grade information, which is always available.

Attendance: Students are responsible for completing all 11 laboratory exercises, listed below. Excused absences must be pre-arranged. It is inappropriate to bring children to class, and Dixie State College policy prohibits this practice.

Exams: Two laboratory exams will be given, which are comprehensive. Questions will be fill in the blank format, based on an understanding of laboratory procedures and demonstration of ability. **Each exam, including the final, is worth 500 points, for a total of 1000 points possible.** Missing an exam is strongly discouraged; makeup exams cannot be given.

LABORATORY SCHEDULE

			Lab Manual chapter
R	1/9	Lab Introduction: Dissection safety, phylogenies	
R	1/16	Survey of skeletons, skulls, lampreys	Handout, 5, 16, 25, 34
R	1/23	Early chordates, hagfish, lampreys	1-3
R	1/30	Articulating/analyzing a mammalian skeleton	
R	2/6	Articulating a mammalian skeleton	
R	2/13	Dissecting vertebrate muscles	6, 14, 17, 26, 35
R	2/20	Dissecting vertebrate muscles	26, 35
R	2/27	Review Bones/Muscles	
R	3/6	FIRST LAB EXAM--BONES & MUSCLES	
R	3/20	Nervous systems, sense organs	12, 14, 22, 31, 40
R	3/27	Guts	8, 14, 19, 28, 37
R	4/3	Respiratory	8, 14, 19, 28, 37
R	4/10	Cardiovascular/Urogenital	11, 14, 20, 21, 29, 30, 38, 39
R	4/17	Review for final	
R	4/24	FINAL LAB EXAM	

