Dr. Terry D. Jones

Office:	S 267	e-mail:	tdjones@csustan.edu
Office hours:	W 9-11	Phone:	209.667.3488

COURSE DESCRIPTION

Comparative study of organ and organ systems in representative vertebrates with emphasis on functional and evolutionary relationships. To be enrolled in this course you must have passed BIOL 1050 and BIOL 1150.

COURSE OBJECTIVES

ZOOL 3150 is a comprehensive course on anatomy and morphology of vertebrates. Morphology is a biological discipline and not a static list of terminology; anatomy is only truly understood within the evolutionary, developmental, and functional contexts. We will focus on four broad questions:

- What are components of the major anatomical systems in vertebrates?
- What are the functions of these anatomical structures?
- How do structure and function complement one another?
- What is the evolutionary history of these systems?

Based on these, you should be able to apply what you have learned to unknown vertebrate systems and use that knowledge to make predictions and reasoned reconstruction of 600 million years of vertebrate natural history.

As a result, by the end of the course successful students will:

- Understand the organization of the vertebrate body, the major features and interrelationships of the organ systems, and the relationship of structure and function
- Visualize the internal anatomy and to relate this to surface features
- Understand the nature of science and to the biological significance of animal structure
- Develop your care in verbal expression (including the precise use of English as well as of scientific terminology) and habits of logical and critical thinking

There is a substantial amount of information to be mastered in this course. To do well, one must devote a minimum of two hours of preparation and/or review outside of class for every hour in class (at total of 18 hours/week). Each lecture and lab is organized with the assumption that you have read the assigned material prior to class. If you cannot dedicate the time and effort needed for this course, you should reconsider your enrollment.

Education is not mere memorization and regurgitation—it is learning how to learn, understanding what you have learned, and being able to communicate what you have learned. While some memorization is necessary, your focus should be on understanding and communication of that understanding. To communicate we must be able to convey meanings as precisely as possible; this is the function of language. Misuse of words limits understanding, betrays a lack of understanding in a speaker, and undermines the reputation of someone who presents themselves as an educated person.

REQUIRED TEXTS/MATERIALS

- Kardong, KV. 2015. Vertebrates: Comparative Anatomy, Function, Evolution, 7e. McGraw-Hill
- Kardong, KV and Zalisko, EJ. 2015. Comparative Vertebrate Anatomy: A Laboratory Dissection Guide, 7e. McGraw-Hill.
- Shubin, N. 2008. *Your Inner Fish*. Pantheon.
- Instructors Dissection kit. Nasco.
- Gloves (nitrile)

OPTIONAL TEXTS/MATERIALS

- Borror, DJ. 1988. Dictionary of Word Roots and Combining Forms. McGraw-Hill
- Lab coat (or old shirt)

COURSE INFORMATION

Information for the course (syllabus and other relevant material) can be

Anatomy is the basis of improved zoology. The classification of animals is founded upon their organization. This can be ascertained only by dissection. The use of the knife is recommended for the purpose of acquiring an acquaintance with the structure of animals. It is proposed that the members avail themselves of all opportunities to cultivate COMPARATIVE ANATOMY, *and to communicate the results of their labors and researches to society.*

—Samuel L. Mitchill MD, LLD

found on Blackboard (blackboard.csustan.edu). Communication regarding the course will be done *via* Blackboard or email; it is your responsibility to check the course page and your university email regularly. If you need to contact me, I recommend that you use email rather than telephone and include the course number or name in the subject line.

EXAMS

Exams are written with the above-listed course objectives in mind. The information in this course cannot be divided into separate, discreet units, therefore, all exams will, to some extent, be cumulative. Exam questions are very carefully written, in technical and standard English. Your answers must be clear, thoughtful, and appropriate to the question asked. Exams will begin promptly at the designated time; late arrivals will not be given extra time. No exams will be handed out after the first student has finished. Correct spelling, grammar, and penmanship are necessary for effective communication. Therefore, spelling and/or grammatical errors will result in loss of points on exams; illegible and/or incoherent answers will receive no credit. Exam scores will be posted on Blackboard after they are graded. After exams have been returned, students have one week to dispute scores; no scores will be changed after that time.

Lecture exams will not include specific questions from lab, but lectures, commentaries presented in lab, the lab manual, and any other supplemental materials are all good sources of possible questions. Exam questions rarely come directly from the text, but it is unwise to ignore it. Exam questions may include almost any format. The final exam will include both new and cumulative material.

Lab exams will be in a timed, practical format and will focus on identification, understanding of relationships, and function. Anything included in the lab manual or lecture is fair game. As a way of testing your understanding, lab exams may include "unknowns" (*i.e*., materials that you have not seen in class). Lab practical exams are very time-consuming to set up; make-up lab practical exams will not be given.

Don't put off reviewing for exams, but start well before the deadlines approach. It is best to start studying for the first exam on the first day of class. Review after each class; review everyday including weekends and you will learn more easily, and, as a result, you will be more confident and do better on exams. See the Course Schedule for exam dates.

SUPPLEMENTAL READING

In addition to the text book and lab manual, there will be assigned supplemental readings. Shubin's *Your Inner Fish* is a book that we will be reading throughout the term. For each chapter a one-page summary and three short answer questions must be turned in (see Course Schedule). Each of these is worth a maximum of 10 points. Late submissions will not be accepted for any reason. The lowest score will be dropped.

ATTENDANCE

Regular attendance is vital to your success in this course. You are expected to attend regularly, come to class on time, and stay until the end of the class period. Attendance requires not only your physical presence, but your attention and participation as well. Students who are physically present, but inattentive (including, but not limited to, sleeping, excessive conversation, texting, e-mailing, web-surfing, being disruptive, etc.) may be asked to leave. Attendance will be taken each day in lecture and lab, but will not earn points directly. Unexcused absences for gradable events will result in no score, but in the event of documented compelling circumstances, attempts will be made to work out conflicts prior to the absence.

GRADING

CR/NC grades are not approved by the University for this course. Grades are determined by the points you earn during the course. Points are awarded for your ability to communicate your knowledge and understanding of the material in this course. The performance of your classmates will have no impact on your grade. Your overall grade will be determined by your combined performance in the course. Course grades will be determined as follows: A ≥ 85%, B ≥ 75%, C ≥ 65%, and D ≥ 55%. The use of +/- grades is at my discretion.
Dissection is a necessary component to the lab. Students who fail to actively participate in dissection will receive a failing grade regardless of their scores.

Scores will be posted on Blackboard, but it is expected that students will keep track of their scores (including copies of exams, assignments, etc.) for the duration of the term. Because of potential privacy issues, scores and/or grades will not be given out *via* e-mail or phone. After the end of the term, students may access their course grades at *my.csustan.edu*.

In all affairs it's a healthy thing now and then to hang a question mark on the things you have long taken for granted.

—Bertrand Russell

COURSE DROP AND WITHDRAWAL POLICY

The policies for this course are the same as the university policies: "Adding or dropping courses after the Enrollment Census Date will not be allowed. After the Enrollment Census Date, students are responsible for completion of the course(s) in which they are enrolled." Withdrawal from courses after the Enrollment Census Date may be allowed "for documented extreme circumstances beyond the student's control". Illness and similar catastrophes may qualify as extreme circumstances; academic difficulties do not. Withdrawal from the course must be approved by the instructor(s), the chair of the Department of Biological Sciences, and the dean of the College of Science before being submitted to Student Affairs for final approval.

LAB SAFETY

Each student must watch the Lab Safety tutorial and pass the quiz (with 100%) on Blackboard (2014-2015 BioLab Safety: BioLab Safety). Failure to do so by the end of the second week will result in disenrollment from the course.

OPEN LAB

The anatomy lab (N224) will generally be available for study/review on Fridays from 10:00-3:00. It is highly recommended that you make use of this time. However, inappropriate use of the lab or destruction/loss of lab materials during open lab will result in cancellation of this privilege for the duration of the term for all students.

RECORDING POLICY

The use of audio and/or video recorders or cameras is not permitted during lecture or lab. An exception is made for students who are registered with Disability Resource Services and approved for this accommodation. If you do not intend to comply with this policy, please enroll in another class.

STUDENTS WITH DISABILITIES

Students with documented disabilities need to make an appointment with me as soon as possible to discuss course adaptations and/or accommodations. If you have an undocumented disability, contact Student Support Services.

PERSONAL INTEGRITY

Behavior that interferes with the instructor's ability to teach or the ability of students to benefit from instruction will not be tolerated. Examples of such behavior include: audible ring tones, late arrivals, early departures, irrelevant conversation, and inappropriate use of phones or computers. Inappropriate behavior will be dealt with as severely as university regulations allow. In addition, misuse of lab materials will result in lost points and may result in grades being withheld until the department has been compensated for damaged materials. Behavior that is not consistent with the Student Conduct Code—including any form of academic dishonesty—will result in immediate expulsion from the course, a failing grade, and the matter will be referred to the Office of Student Judicial Affairs.

TIPS FOR SUCCESS

There is a substantial amount of information to be mastered in this course. To do well, one must devote a minimum of two hours of preparation and/or review outside of class for every hour in class (at total of 18 hours/week). Each lecture and lab is organized with the assumption that you have read the assigned material prior to class. If you cannot dedicate the time and effort needed for this course, you should reconsider your enrollment.

This course has a reputation for being challenging however, it can be made much easier if you heed the following advice:

- Dedicate the necessary to time to the course
- Attend and actively participate in lecture and lab
- Preview relevant material before lecture and lab
- Take good notes and review them daily
- Make use of Open Lab times to study and review
- Make use of the index and glossary in the text and a dictionary
- If you have questions, ask

IMPLIED CONTRACT

This syllabus serves as a contract between you and the instructor. Your continued enrollment in this class denotes your understanding of, and agreement with, the material herein. You are expected to print this syllabus and keep it in your notebook to refer to during the term.

ZOOL 3150: COMPARATIVE ANATOMY OF VERTEBRATES ***Spring 2015***

COURSE SCHEDULE†

Date	Lecture Topic	Text	Shubin	Date	Lab Topic	Manual
27 Jan	Introduction, Chordates, and Vertebrates	Ch. 1-3		29 Jan	Terminology; non-vertebrates and lamprey	Ch. 1-3
29 Jan						
03 Feb	Skeleton	Ch. 7-9	Ch. 1	05 Feb	Skeleton	Ch 5
05 Feb						
10 Feb			Ch. 2	12 Feb		
12 Feb						
17 Feb	Muscles	Ch. 10	Ch. 3	19 Feb	Muscles	Ch. 6
19 Feb						
24 Feb				26 Feb		
26 Feb	Exam 1 (50 points)					
03 Mar	Respiratory	Ch. 11		05 Mar		
05 Mar			Ch. 4			
10 Mar				12 Mar	Practical 1 (100 points)	
12 Mar	Circulatory	Ch. 12	Ch. 5			
17 Mar				19 Mar	Digestive	Ch. 7
19 Mar			Ch. 6			
24 Mar	Digestive	Ch. 13		26 Mar	Circulatory and Respiratory	Ch. 8
26 Mar			Ch. 7			
02 Apr				02 Apr		
14 Apr	Exam 2 (50 points)			16 Apr	Urogenital	Ch. 9
16 Apr	Urogenital	Ch. 14				
21 Apr				23 Apr		
23 Apr			Ch. 8			
28 Apr	Nervous	Ch. 16, 17		30 Apr	Nervous	Ch. 10
30 Apr			Ch. 9			
05 May				07 May		
07 May	Biological Design	Ch. 4	Ch. 10			
12 May				14 May	Practical 2 (100 points)	
14 May	Conclusions	Ch. 18	Ch. 11			
21 May	Final Exam, 8:30-10:30 (100 points)					

† The lecture schedule is tentative and will likely change. However, barring unforeseen circumstances, exam dates will not change.