

COMPARATIVE ANATOMY AND EVOLUTION OF THE VERTEBRATES
Syllabus – Spring – 2019

Instructor: Dr. R. E. Clopton

Daily Schedule, Office Hours, Telephone, Email:

R. E. Clopton, PhD (rclopton@peru.edu)					
Office:	Daily Class & Office Schedule				Phone No.
Hoyt 312	Spring 2019				872-2237
	Monday	Tuesday	Wednesday	Thursday	Friday
8:00 am to 9:15 am	Comp. Anat. Verts Biol 42000A Lecture Hoyt 215	Office/Lab Hours	Comp. Anat. Verts Biol 42000A Lecture Hoyt 215	<i>Journal of Parasitology</i> Editor	<i>Journal of Parasitology</i> Editor
9:30 am to 10:45 am	Botany Biol 10100A Lecture Hoyt 104	Comp. Anat. Verts Biol 42000A Lab Hoyt 221	Botany Biol 10100A Lecture Hoyt 104	<i>Journal of Parasitology</i> Editor	RESEARCH
11:00 am to 11:50 pm	Office/Lab Hours	Comp. Anat. Verts Biol 42000A Lab Hoyt 221 9:15-11:00	Office/Lab Hours Hoyt 105	<i>Journal of Parasitology</i> Editor	RESEARCH
12:30 pm to 1:45 pm	Office/Lab Hours	<i>Journal of Parasitology</i> Editor	Office/Lab Hours	<i>Journal of Parasitology</i> Editor	RESEARCH
2:00 pm to 3:45 pm	<i>Journal of Parasitology</i> Editor	RESEARCH	<i>Journal of Parasitology</i> Editor	RESEARCH	RESEARCH
3:45 pm to 4:45 pm	<i>Journal of Parasitology</i> Editor	RESEARCH	<i>Journal of Parasitology</i> Editor	RESEARCH	RESEARCH
I am available in my office or the adjoining lab during office hours. I am available at other times by appointment. "Research" is heavily dedicated to mentoring student research and " <i>Journal of Parasitology</i> Editor" is concentration intensive, thus these activities take priority for scheduling purposes.					

Course Meets: Lecture meets Monday/Wednesday 08:00-09:15, Hoyt 215. *Laboratory meets Tuesday 9:15-11:00, Hoyt 221.*

Required Textbook: Wischnitzer, S. *Atlas and Dissection Guide for Comparative Anatomy*. W. H. Freeman & Co. New York, NY. This text will supplement lecture material and is required for laboratory. Kent, G. and R. Carr. *Comparative Anatomy of the Vertebrates 9th Edition*. Figures and laboratory handouts for the course are available in PDF format on the course website. You should print copies of the figures before class and use them to supplement your notes in lecture.

Course Website: <http://science.peru.edu/compverts>

Course Description & Objectives

Description and objectives: The evolutionary rise and diversification of vertebrates is studied through a detailed analysis of comparative anatomical design among major vertebrate taxa in lecture and the use of comparative anatomical dissection techniques in laboratory. 3 hours lecture, 2 hours laboratory, 4 credits.

Student Objectives: Successful students will be able to differentiate and recognize the major groups and subgroups of chordates, understand the fundamental elements and patterns of chordate anatomy, understand the major evolutionary events in the radiation of chordate life and their underlying anatomical causes, integrate laboratory exercises with lecture material, and apply this knowledge to contemporary and evolutionary models of chordate anatomy. You are responsible for all of the material presented in lecture and all of the material covered in the assigned readings.

Prerequisites: Biology 101 and Biology 102 (These are requirements, not recommendations.)

Upon completion of this course you should be able to:

1. Visualize the major anatomical features and systems of vertebrates.
2. Understand the evolutionary rise of vertebrate anatomical features and systems.
3. Recognize the commonalities and differences of vertebrate anatomical features and systems across vertebrate groups.
4. Understand the role the vertebrate anatomical evolution has played in vertebrate diversification.
5. Integrate laboratory exercises with lecture material

At the beginning of the course, we will discuss how these objectives fit into the College's and School's mission and goals. The instructor reserves the right to modify any aspect of the course syllabus or content. Any modifications will be communicated to students in advance.

Expectations & Instructional Approach

Format: This is an advanced lecture/laboratory course. A majority of the course time will be dedicated to lecture. There is a lot of material for you to learn and synthesize and the lecture is designed to help you simplify, connect, and assimilate this material. Laboratory is an intensive comparative dissection course. There is no prosector for this course. You will do your own dissections. Nothing looks like the drawings in the book and you can't succeed simply by memorizing diagrams. Things are a little bit different in every specimen, so take the time to compare your specimen to those of your classmates. Remember that I don't have any extra sharks, mudpuppies, or cats up my sleeve: the specimens you prepare will be the same specimens used in your practical exam – prepare good specimens for your exams and know the variation.

Lecture attendance: I expect you to attend each class meeting. Whether you come to class is up to you, but I will not repeat lectures. *Consistent attendance will improve your final grade more than any other investment of time that you can make. I urge you to attend each lecture and take detailed notes.*

Laboratory attendance: Laboratory is required, not optional. Failure to complete laboratory constitutes failure to complete the course as a whole.

Interruptions: Cell phones are allowed as long as their use is limited to extenuating circumstances (active duty military service, first-response on-call, imminent parturition, etc.) Translation: "Be polite and innocuous and I don't care". HOWEVER: active cell phones during an examination or quiz are a violation of academic integrity and are grounds for summary failure of the course, regardless of performance.

How to do well:

1. Attend lecture
2. Take notes industriously
3. Review, reorganize, and rewrite your notes
4. Make a vocabulary list:
5. Ask questions
6. Draw.

7. *Do not depend on Google:* The internet is rife with really poor and incorrectly interpreted pictures and videos of vertebrate dissections. Strange as it may seem, you're paying good money to have access to my knowledge and experience as you develop your own through actual dissection. Trust your own senses rather than some unknown boob with a cheap digital camera and an internet connection.

Assessment and Grading

Assessment: There will be 3 regular lecture exams (100 points each) and 2 laboratory practical exams (50 points each). Thus there are 400 points for the course. I will use the standard PSC grading scale (90%, A; 80%, B; 70%, C; 60%, D; <60%, F). I reserve the right to modify the final grade distribution and to give unannounced quizzes to encourage attendance and promote consistent study habits.

Lecture exams and quizzes: Lecture exam dates are listed in the attached schedule. Exams will be given **ONLY** when scheduled: if you have a conflict, tell me before the end of the first week of class. *There are no exceptions. None.* Permission to be excused from an examination will be given only in cases involving extreme or extenuating circumstances. College functions, class field trips, and athletic events do not constitute "extreme or extenuating circumstances." These are scheduled events. **Please check your schedule and set your priorities appropriately.** Do not email, telephone, or leave phone messages regarding missed exams, classes, labs, or quizzes: I delete them without consideration.

Laboratory practical exams: There will be a midterm and final laboratory practical exam. I will provide more details of format and we will schedule dates for these exams as the laboratory progresses.

Late Assignment Policy: I do not accept late work.

College's Incomplete Coursework Policy:

To designate a student's work in a course as incomplete at the end of a term, the instructor records the incomplete grade (I). Students may receive this grade only when serious illness, hardship, death in the immediate family, or military service during the semester in which they are registered prevents them from completing course requirements. In addition, to receive an incomplete, a student must have completed substantially all of the course's major requirements.

Unless extenuating circumstances dictate otherwise, students must initiate requests for an incomplete by filling out an Incomplete Grade Completion Contract, which requires the signature of the student, instructor, and Dean. The Incomplete Grade Completion contract cites the reason(s) for the incomplete and details the specific obligations the student must meet to change the incomplete to a letter grade. The date by which the student agrees to complete required work must appear in the contract. The Dean, the instructor, and the student receive signed copies of the Incomplete Grade Completion Contract.

Even if the student does not attend Peru State College, all incomplete course work must be finished by the end of the subsequent semester. Unless the appropriate Dean approves an extension and if the student does not fulfill contract obligations in the allotted time, the incomplete grade automatically becomes an F.

College's Academic Integrity Policy:

The College expects all students to conduct themselves in a manner that supports an honest assessment of student learning outcomes and the assignment of grades that appropriately reflect student performance. It is ultimately the student's responsibility to understand and comply with instructions regarding the completion of assignments, exams, and other academic activities. At a minimum, students should assume that at each assessment opportunity they are expected to do their own original academic work and/or clearly acknowledge in an appropriate fashion the intellectual work of others, when such contributions are allowed. Students helping others to circumvent honest assessments of learning outcomes, or who fail to report instances of academic dishonesty, are also subject to the sanctions defined in this policy.

Instances of academic dishonesty may be discovered in a variety of ways. Faculty members who assign written work ordinarily check citations for accuracy, run data base and online checks, and/or may simply recognize familiar passages that are not cited.

They may observe students in the act of cheating or may become aware of instances of cheating from the statements of others. All persons who observe or otherwise know about instances of cheating are expected to report such instances to the proper instructor or Dean.

In order to promote academic integrity, the College subscribes to an electronic service to review papers for the appropriate citations and originality. Key elements of submitted papers are stored electronically in a limited access database and thus become a permanent part of the material to which future submissions are compared. Submission of an application and continued enrollment signifies your permission for this use of your written work.

Should an occurrence of academic misconduct occur, the faculty member may assign a failing grade for the assignment or a failing grade for the course. Each incident of academic misconduct should be reported to the Dean and the Vice President for Academic Affairs (VPAA). The VPAA may suspend for two semesters students found to be responsible for multiple instances of academic dishonesty. The reason for the suspension will be noted on the student's transcript.

A faculty member need present only basic evidence of academic dishonesty. There is no requirement for proof of intent. Students are responsible for understanding these tenets of academic honesty and integrity. Students may appeal penalties for academic dishonesty using the process established for grades appeals.

Title IX Compliance Notice

Peru State College is an equal opportunity institution. PSC does not discriminate against any student, employee or applicant on the basis of race, color, national origin, sex, disability, religion, or age in employment and education opportunities, including but not limited to admission decisions. The College has designated an individual to coordinate the College's nondiscrimination efforts to comply with regulations implementing Title VI, VII, IX, and Section 504. Inquiries regarding non-discrimination policies and practices may be directed to Eulanda Cade, Director of Human Resources, Title VI, VII, IX Compliance Coordinator, Peru State College, PO Box 10, Peru, NE 68421-0010, (402) 872-2230.

Students requesting reasonable accommodation and tutoring services should contact the Center for Achievement and Transition Services (CATS).

Tentative Course Schedule

The lecture topic sequence appears below. This is a topical guideline subject to change.

Week of:	Lecture, Due Dates
Jan 7	Introduction: the tools and evidence; Homology, Analogy & Phylogeny
Jan 14	Origin of Vertebrates
Jan 21	Early Fishes, Agnatha
Jan 28	Gnathostome Fishes- Development and anatomy, Complex brain, Early bone, True bone, Jaws, Single circuit cardiopulmonary systems
Feb 4	Gnathostome fishes (cont); EXAM I (Feb 6)
Feb 11	Gnathostome fishes: (cont)
Feb 18	Amphibians: extinct and extant; Early tetrapods, the terrestrial revolution; Development and anatomy; Complex cardiopulmonary systems; Axial Skeleton; Appendicular skeleton
Feb 25	Amphibians: : (cont)
Mar 4	NO CLASS – MID TERM BREAK
Mar 11	Vertebrate Classification II. EXAM II (March 13)
Mar 18	Reptiles: Development and anatomy; Complex skull; Modern complex bone and cartilage
Mar 25	Reptiles: Development and anatomy; Complex skull; Modern complex bone and cartilage
Apr 1	No CLASS MONDAY-Spring Break. Birds: Development and anatomy; Dermal structure and elaboration; skeletal/visceral innovations.
Apr 8	Birds: (cont)
Apr 15	Introduction to mammals, Exam III (April 17)
Apr 22	Dead Week Mammals: Development and anatomy; Urogenital systems; Renal systems; Digestive systems
May 29	FINALS WEEK

