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BIOE 403.02: Comparative Vertebrate Anatomy

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Biology (BIOE) 403: Comparative Vertebrate Anatomy

Fall 2021 Lab Syllabus

Thursdays 2:00-4:50 pm

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Office Hours: By appointment

Hila Tzipora Chase
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Office Hours: By appointment

Location: Thursday (2:00 PM – 4:50 PM) in Health Sciences 102 and at Field Research Station at Fort Missoula, 2960 Post Siding Road, Missoula, MT 59804

Text: De Iuliis and Pulerà, *The Dissection of Vertebrates – 3rd Edition*

There are also, handouts, numerous websites, alternate dissection guides, and study guides to help in the study of comparative anatomy.

Lab handouts will be available on moodle in advance of lab at <http://umonline.umt.edu>

It is your responsibility to print out handouts (or bring an electronic copy), finish the reading and complete your mastery quiz prior to coming to the lab.

Experiment Days: Sessions at the Field Research Station will provide time in an active biomechanics and functional anatomy lab for **group research projects** on novel scientific questions. Thus, the exact time and dates that you will be required to attend will depend on your project. Project assignments will be made in the first few weeks. At the end of the semester, you will write your own scientific manuscript, and participate in a group presentation of the results of your research. Times of meetings will be announced; due dates are on the attached handout.

Mastery Quizzes: For most weeks, you will have three tasks. The first is to complete an online “Mastery Quiz” prior to attending lab. The point of these quizzes is to help you prepare for lab and the practical. They will also help you to realize what you know vs. what you will need to study more.

Your goal is to answer 100% of the questions correctly. But don’t stress – you will be given an unlimited number of attempts to achieve that goal. If you can get a perfect score, regardless of the number of attempts, you get full credit.

These quizzes will be due 30 minutes before the start of lab. There will be 5 quizzes total.

In-lab Assignments: Your second task is to identify all relevant anatomical features on the “Terms to Know” sheet for the week and complete simple sketches of the anatomy, including those terms. This is your “ticket out the door”. Once you have identified (on a physical specimen or on online resource) and labeled all terms, I will give you a check on Moodle for those points.

Homework: Your third task is a quick assignment designed to help you think from an evolutionary perspective. You will select 10 anatomical features from the Terms to Know sheet. You will then need to 1) place the presumptive origin of those features on the vertebrate phylogeny, and 2) write a 1-2-line hypothesis for the origin/function of each feature.

Late Policy: It is your responsibility to get to lab on time having prepared yourselves for the work. If students taking this course online from different time zones, I do not expect you to be present on the zoom call when the lab meets. However, I do expect you to complete your assignments on time with the UMT schedule.

Practical Exam: Consists of practical questions about structures, functions, evolutionary trajectories, and comparisons of anatomy. More details as the practical approaches.

Lab Points:

Quizzes	50 – 10 pts each
In-Lab Assignment	20 – 5 pts each
Homework	30 – 6 pts each
Lab practical	50

Group project	50
Participation/Preparation (20 pts)	
Group Evaluation (10 pts)	
Group Presentation (20 pts)	
Total	200

Learning Outcomes:

1. Students will be able to discuss and write syntheses of the major themes in the evolution of vertebrate form and function.
2. Students will be able to graph, problem-solve, and interpret figures describing patterns and processes in functional morphology, comparative biomechanics and physiology.
3. Students will be able to conduct all aspects of an original, guided research project within a small group, with products including a research paper and a public presentation both summarizing the experiment and results.
4. Students will be able to identify anatomical traits and functions in all chordates.
5. Students will be able to dissect and identify anatomical traits and functions in a representative mammal specimen.

Academic Honesty: Please do not cheat or plagiarize (“the practice of taking someone else's work or ideas and passing them off as one's own”). In a small course, it’s painfully obvious when academic dishonesty has occurred. This will result in an automatic zero on the assignment and I will have to report it to the university. It’s no fun for anyone, so please don’t do it.

Lab Schedule (subject to revision):

Readings in *The Dissection of Vertebrates*. Other materials posted to Moodle.

Date	Rel. reading	Homework Due	Quiz?	Location	Lab
9-2	xxvi-18, 19-20			HS 102/114	Lab 1: Lang. of Anatomy, Phylogenetics Analysis
9-9	147-176		Quiz 1	HS 102	Lab 2a: Post-cranial skeleton
9-16	19-20, 27-35, 79-82, 89-96, 127-133, 147-176, 287-293, other materials	Lab 1		HS 102	Lab 2b: Post-cranial skeleton
9-23				Field Research Station	Biomechanics Lab Tour, Initial Group Meetings
9-30	Revisit cranium in past readings, 253-285	Lab 2	Quiz 2	HS 102	Lab 3: Cranial skeleton
10-7				HS 102	Experiment Day
10-14	177-204	Lab 3	Quiz 3	HS 102	Lab 4a: Muscle
10-21	39-45, 96-109, 117-204, 297-300, other materials			HS 102	Lab 4b: Muscle

10-28				Field Research Station	Experiment Day
11-4	70-77, 244-252, other materials	Lab 4	Quiz 4	HS 102	Lab 5: Nervous system, brain, eye
11-11	Veteran's Day – No Lab - Quiz 5 and Homework on UMOonline (Moodle)				
11-18				HS 102	Lab Practical
11-25	Thanksgiving – No Lab				
12-2				Field Research Station	Experiment Day
12-2				Field Research Station	Experiment Day, Presentation Preparation
12-9				Field Research Station	Symposium