

Comparative Vertebrate Anatomy — Biology 370/570

SPRING

2019



CVA alums Lilly, Katelyn, and Matt at the bird conservation center in Volcano, HI

BY THE END OF THE SEMESTER YOU WILL BE ABLE TO:

- ✓ Understand the Darwinian concept of Decent with Modification by studying homologous structures across a variety of vertebrate groups.
- ✓ Identify anatomical structures including bones, muscles, and organ systems from representative vertebrates including lamprey, mudpuppy, shark, and cat.
- ✓ Discuss topics in comparative anatomy with your classmates during classroom lectures, labs, and online. Integrate information from the lectures, labs, textbook, primary literature and other courses into the discussion.

CVA and the Bigger Picture

Skills learned in comparative are applicable to the fields of wildlife ecology, veterinary medicine, systematic biology, and the behavioral sciences. This course fulfills 4 credits of 300 level course work towards the Forty Credit Rule for a BS degree. The course also fulfills an elective requirement for the Biology Major (advanced animal biology) and a collateral course requirement for the Wildlife Ecology Major.

Course Description and Objectives

This course will emphasize the structure and function of vertebrates, accomplished primarily through lectures and discussion as well as investigation through laboratory study. I will use Canvas for the first time to distribute lecture outlines, which you will need to have filled in and uploaded PRIOR to attending lecture. The idea is to facilitate discussion and interaction rather than have me feed you facts. The laboratory portion of the course is designed to look in detail at vertebrate anatomy and you will rely heavily on the rather pricey laboratory manual I've asked you the purchase.

Dead Thrush was an anatomical study painted by Beatrix Potter in 1902. She was an outstanding illustrator best known for her children's books like the Tales of Peter Rabbit and her passion for conservation.



Dr. Christopher J. Yahnke

Office: TNR 478 phone: x2455 email: cyahnke@uwsp.edu

Office hours: Mondays and Wednesdays 10-12 or by appointment

Lecture: T R 9:00 - 9:50 TNR 400

Lab section: T R 10:00 - 11:50 TNR 400

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Grading

Your grade in this class will be determined by your performance on two one-hour exams, three laboratory practicals, and class notes. Each exam is worth 100 points (x2 = 200 points), lab practicals are worth 50 points each, and class notes will be filled in and submitted to the drop box in Canvas prior to class and be worth 5 points each (x20 = 100 points). There will also be a team oral presentation worth 50 points. Thus, there are a total of 500 points to be earned in this class. The final points will be added up, divided by 500, and multiplied by 100; the percentage obtained will determine your grade.

90-100% = A

80-89% = B

70-79% = C

60-69% = D

< 60% = F

There will be no make-up exams unless arranged with the instructor in advance. This is a 9:00am lecture; don't oversleep and arrive late or sleep through an exam. You will not be able to reschedule a lab practical so make sure to set your alarm on "really frickin' loud" the night before a lab practical. Missed exams will result in a zero. Extreme cases will be reviewed on an individual basis.



Manatees are rare among mammals in their ability to continuously replace their teeth. Their large squamosal bone accommodates masseter muscles used for grinding their abrasive plant diet.

Academic Honesty:

Any form of cheating on exams, quizzes, home works, or lab reports, or any misrepresentation of your work will result in zero (0) points being recorded for that graded component of the course. **This includes plagiarism of published works or fellow students. Please see me for any clarification on what constitutes plagiarism if you have doubts.** All students are required to adhere to the standards outlined by UWS/UWSP Chapter 14, Student Academic Standards and Disciplinary Procedures which can be found at the following web address: <http://www.uwsp.edu/admin/stuaffairs/rights/rightsChap14.pdf>

Required Books:

Vertebrates; Comparative Anatomy, Function, Evolution 8th ed. Kenneth Kardong (rental), Lab manual for Vertebrates, 8th ed. Kardong (rental)

Syllabus

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Lectures and Quizzes and More

Week	Date	Topic	Kardong
1	1/22	Course Introduction	
	1/24	Introduction	Chapter 1
2	1/29	Origin of Chordates I	Chapter 2
	1/31	Origin of Chordates II	Chapter 2
3	2/5	Integument	Chapter 6
	2/7	The Vertebrate Story I	Chapter 3
4	2/12	The Skull I	Chapter 7
	2/14	The Vertebrate Story II	Chapter 3
5	2/19	The Skull II	Chapter 7
	2/21	Paul Sereno TED discussion	
6	2/26	The Vertebrate Story III	Chapter 3
	2/28	The Axial Skeleton	Chapter 8
7	3/5	The Appendicular Skeleton	Chapter 9
	3/7	Locomotion	Chapter 9
8	3/12	<u>Exam I through locomotion</u>	
	3/14	Muscular System I	Chapter 10
SB	3/19	Spring Break	
	3/21	Spring Break	
9	3/26	Your Inner Fish	
	3/28	Muscular System II	Chapter 10
10	4/2	Digestive System I	Chapter 13
	4/4	Digestive System II	Chapter 13
11	4/9	Urogenital System I	Chapter 14
	4/11	Urogenital System II	Chapter 14
12	4/16	Respiratory System I	Chapter 11
	4/18	Respiratory System II	Chapter 11
13	4/23	Circulatory System I	Chapter 12
	4/25	Circulatory System II	Chapter 12
14	4/30	Sensory Organs I	Chapter 17
	5/2	Sensory Organs II	Chapter 17
15	5/7	Your Inner Fish presentations I	
	5/9	Your Inner Fish presentations II	

Final Exam Monday May 13th 8:00 – 10:00 Open Notes

LAB SCHEDULE

Week 1 Tuesday - Set up lab
Thursday – Cladograms

Week 2 Tuesday - Protochordates
Thursday – Agnathans

Week 3 Integument

Week 4 The Skull

Week 5 The Skull

Week 6 Postcranial Skeleton
Thursday – Lab Exam I

Week 7 Postcranial Skeleton

Week 8 Muscular System

Week 9 Muscular System

Week 10 Digestive System

Week 11 Urogenital System
Thursday – Lab Exam II

Week 12 Respiratory System

Week 13 Circulatory System

Week 14 Sensory Organs

Week 15 Tuesday - Open Lab study
Thursday – Lab Exam III

*Science is built up of facts, as a house is built of stones;
but an accumulation of facts is no more a science than a
heap of stones is a house. ~Henri Poincaré, Science and
Hypothesis, 1905*

1. Ability to work in a team structure
2. Ability to make decisions and solve problems (tie)
3. Ability to communicate verbally with people inside and outside an organization
4. Ability to plan, organize and prioritize work
5. Ability to obtain and process information
6. Ability to analyze quantitative data
7. Technical knowledge related to the job
8. Proficiency with computer software programs
9. Ability to create and/or edit written reports
10. Ability to sell and influence others

**THE 10 SKILLS
EMPLOYERS
MOST WANT IN
2019
GRADUATE.**

NATIONAL ASSOCIATION
OF COLLEGES AND
EMPLOYERS

You are ambassadors of UWSP!

CVA alum Silvia is currently finishing dental school at Marquette University. I love hearing from former students and the impact UWSP had on their future goals. Be awesome!



You are educated. Your certification is in your degree. You may think of it as the ticket to the good life. Let me ask you to think of an alternative. Think of it as your ticket to change the world.

[Tom Brokaw](#)