Course Syllabus – Spring 2026
BIOL 3234 – Comparative Anatomy of Vertebrates
Lecture: Bolin Hall, Room 248
Lab: Bolin Hall, Room 211

Contact Information

Instructor: Joel G. Brant, PhD
Office: Bolin Hall 224A
Office hours:
- Mondays, Wednesdays, & Fridays: 9:00-11:00
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Course Description

The science of comparative chordate anatomy is the study of similarities and differences in structural organization among members of the Phylum Chordata. The purpose of this discipline is to provide a consensus of what constitutes a chordate animal and to explore how anatomical structure reflects relatedness and evolutionary change in the chordates. The intent of this course is to introduce you to the science and principles of comparative anatomy and to increase your understanding and appreciation of the vast complexity of chordate organisms.

The lecture portion of this course will refer regularly to the Kardong textbook. Reading assignments for each lecture topic are provided below to help you familiarize yourself with the material. I expect you to have read the assigned chapters before class and be prepared to discuss the topic during class. Exams will cover material from both lecture and the textbook.

Course Objectives

- Students will possess an intermediate level understanding of fundamental biological principles including the diversity of life, evolution, vertebrate phylogeny, vertebrate anatomy, & vertebrate development.
- Students will possess the ability to dissect a vertebrate, identify the anatomical structures of vertebrates, & use biological terminology correctly.
- Students will possess an understanding of the differences and similarities in anatomy and morphology among vertebrates.

Textbook & Instructional Materials

Kardong, Kenneth V. 2018. *Vertebrates: Comparative Anatomy, Function, Evolution*. 8th Edition. McGraw Hill Publishers, New York, New York. (ISBN13 = 978-1259700910)

Fishbeck, Dale W., & Aurora Sebastiani. 2001. *Comparative Anatomy: Manual of Vertebrate Dissection*. Morton Publishing Co., Englewood, Colorado. (ISBN13 = 978-1617310423)

Examination Gloves (latex, rubber, other).

Appropriate clothing for lab.

Course Policies

Absences

Attendance of both lecture and lab are essential for successful completion of this course. Attendance will be taken regularly and failure to attend will have consequences. Absences due to participation in college-sponsored co-curricular events or college-recognized religious observances are considered excused absences provided appropriate procedures are followed. The student must notify the instructor at the earliest possible time before the absence and will be responsible for the work and material we cover in class. A student with excessive absences may be dropped from a course by the instructor.

Make-up Work

If a student misses an exam due to a university approved absence or due to an unforeseen health or family emergency, they may make arrangements with the instructor to take a make-up exam. You are responsible for providing evidence to substantiate the reason for any absence as soon as possible. Missed exams will be recorded as a score of zero unless written documentation is received and authenticated. Missed exams must be made-up within a week of the exam date. There will be no make-ups for missed quizzes.

Desire-to-Learn (D2L)

For this course D2L will generally be used as a document repository (lecture notes, lab notes, recorded lectures, and lab videos). You can log into D2L through the MSU Homepage (or https://d2l.msutexas.edu/d2l/home). If you experience difficulties, please use links to technical help found on the D2L site.

Grade Determination

The final grade for this course will be determined by considering both your lecture grade and your lab grade. The lecture grade will comprise 60% of the final grade for the course and consist of four 150-point exams. The first 3 exams will not be comprehensive and cover material from both the reading and lecture since the last exam. The final exam will be comprehensive, dealing with all the material covered during the lecture portion of the course. All lecture exams will consist of a combination of multiple choice, matching, short answer, and short essay questions.

The lab grade will comprise 40% of the final grade for the course and consist of two 150-point exams, nine 10-point weekly quizzes, and 10 points for lab cleanliness (see below). All exams will be practical based (i.e. specimen based) and not comprehensive. Each quiz will cover material from the preceding week and will either be practical based.

Table 1: Grade determination based on 1000 points: lecture (600 points) + lab (400 points)

Grade	Points
A	≥ 900
B	800 to 899
C	700 to 799
D	600 to 699
F	< 600

Lab Cleanliness

Lab partners will be responsible for their assigned space and specimens. Label your specimen clearly. When you are finished working with your specimen, return the specimen to the bag, spray it with preservative, and place it in the proper place. Do not work on any specimen other than your own. **Do not put solid waste in the sink – all solid waste is to be placed in the specified trashcan at the front of the lab.** Do not leave your table greasy or dirty – use the provided cleaner to wipe down the table.

Clean all dissection tools and trays and replace them for the next lab section. Make sure the stools are pushed in before you leave. Persistent failure to leave the lab in a clean state will result in points being deducted from the final lab grade for all individuals involved.

Rules of Conduct

Students in this course will conduct themselves in a respectful and appropriate manner. Disorderly conduct, as defined in the student handbook, will not be tolerated. The instructor may dismiss students from lecture and lab sections due to instances of significant disorderly conduct (especially disruptive, discriminatory, or threatening behaviors). Return to class will be prohibited prior to meeting with the instructor and Biology Department Chair to discuss the incident. A second instance of dismissal will result in permanent removal from the course and an automatic assignment of an "F" grade for lecture and lab. In cases of severe disorderly conduct (usually involving campus security) the student will immediately be removed from the course and assigned an "F" grade, regardless of the number of previous instances.

Please turn off any cell phones or other electronic communication devices (i.e. pagers or instant messaging devices) unless prior permission has been obtained by the instructor. Laptop computers and voice recorders may be used as note taking aids, however individuals who surf the web or play games during class will lose this privilege. Any use of electronic devices during an exam will be taken as a form of cheating and dealt with accordingly (see below).

Use of Artificial Intelligence

Generative artificial intelligence can be an effective aid for studying and the writing process. However, graded assignments are intended to assess the output of the student, not the AI. Students submitting written assignments, data, or other inputs synthesized from artificial intelligence software (ex. ChatGPT, Jasper, Google Bard, etc.) will be given a "0" on assignments and may be failed from the course in accordance with MSU's policies on academic dishonesty and plagiarism.

University Policies

Campus Carry Rules/Policies

Effective August 1, 2016, the Campus Carry law (TX Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. The new Constitutional Carry law does not change this process. Concealed carry still requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit Campus Carry.

Active Shooter Information

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during demanding situations. For more information, visit Safety / Emergency Procedures. Students are encouraged to watch the video entitled "*Run. Hide. Fight.*" which may be electronically accessed via the University police department's webpage: *"Run. Hide. Fight."*

Smoking/Tobacco Policy

University policy prohibits the use of tobacco products in any building owned or operated by Midwestern State University. Adult students may smoke only in the outside designated-smoking areas at each location.

Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State University are informed that strictly enforced policies are in place which prohibit the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state, and federal law for any offenses involving illicit drugs on university property or at university-sponsored activities. Please refer to the **2025-2026 Student Handbook** for further information.

Academic Dishonesty

Dishonesty within the academic community is a profoundly serious matter because dishonesty destroys the basic trust necessary for a healthy educational environment. Academic dishonesty is any treatment or representation of work as if one were fully responsible for it when it is in fact the work of another person. Academic dishonesty includes cheating, plagiarism, theft, or improper manipulation of laboratory or research data or theft of services. A substantiated case of academic dishonesty may result in disciplinary action, including a failing grade on the project, a failing grade in the course, removal from the course, and/or expulsion from Midwestern State University. Please reference the **2025-2026 Student Handbook** for additional information.

Services for Students with Disabilities

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through **Disability Support Services**, located in the **Clark Student Center, Room 168, (940) 397-4140**. Current documentation of disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to Disability Support Services.

Grade Appeal Process

To appeal a grade, consult the Midwestern State University 2023-2024 Student Handbook and visit the following checklists: the Grade Appeal Checklist provides the timeline for appealing from the instructor to the next in line (dean of the college). The Academic Honesty Checklist describes the timeline for appealing from the instructor to the next in line (chair of department) and who must be notified of academic honesty infractions.

Tentative Lecture Schedule

Week	Date	Topic	Chapter
1	1/21 – 1/23	Introduction to Phylogenetic Taxonomy, Evolution, Review of Animal Life	1
2	1/26 – 1/30	Chordate Origins, Protochordates	2
3	2/2 – 2/6	Vertebrate Evolution	3
4	2/9 – 2/13	Vertebrate Evolution	3
5	2/16 – 2/20	Vertebrate Evolution	3
6	2/23 – 2/25	Vertebrate Evolution	3
6	**2/27**	**EXAM #1**	--
7	3/2 – 3/6	Biomechanics, Integument	4, 6
		SPRING BREAK	
8	3/16 – 3/20	Integument, Skeletal System	6, 7, 8
9	3/23 – 3/27	Skeletal System	7, 8
10	3/20	Skeletal System	7, 8
10	**4/1**	**EXAM #2**	--
11	4/6 – 4/10	Muscular System	10
12	4/13 – 4/17	Digestive System	13
13	4/20 – 4/24	Respiratory System	11
14	4/27 – 4/29	Circulatory System	12
14	**5/1**	**EXAM #3**	--
15	5/4 – 5/8	Nervous System	16
16	**5/13**	**FINAL EXAM (8:00 am)**	--

Tentative Lab Schedule

Week	Date	Topic	Chapter
1	1/19	**No Lab**	--
2	1/26	Introduction to Lab, Protochordates, Lamprey Morphology	2, 3, 14
3	2/2	Shark Skull & Skeleton, **Quiz #1**	16
4	2/9	Cat Skull & Skeleton, **Quiz #2**	34
5	2/16	Shark External Anatomy & Musculature, **Quiz #3**	15, 17
6	2/23	Cat External Anatomy & Superficial Musculature, **Quiz #4**	33, 35
7	3/2	Cat Deep Musculature, **Quiz #5**	35
8	3/16	**Lab Mid-Term Exam**	
9	3/23	Brain, Cranial Nerves, & Sensory Structures	22, 40
10	3/30	Digestive & Urogenital Systems, **Quiz #6**	19, 20, 37, 38
11	4/6	Shark Circulatory & Respiratory Systems, **Quiz #7**	19, 21
12	4/13	Cat Circulatory & Respiratory Systems, **Quiz #8**	37, 39
13	4/20	Cat Circulatory System, **Quiz #9**	39
14	4/27	**Review Lab**	--
15	5/4	**Lab Final Exam**	--