

HUMAN EVOLUTIONARY ANATOMY: Syllabus: DRAFT 1/9/2024

Note: this version of the syllabus may be subject to change

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OVERVIEW

In HEB 1420 you will study human anatomy within a functional and evolutionary context. Emphasis is placed on the musculoskeletal system and its innervation by the nervous system, with additional coverage of embryology, development, and the gross anatomy of major organ systems.

Class Meetings: We meet for two 75-minute classes (Tuesday & Thursday 1:30 – 2:45 pm) per week and approximately once a week (either on Thursday or Friday) for a two-hour combined lab and discussion section. Lectures are held in the DeVore Conference room on the fifth floor of the Museum of Comparative Zoology building (MCZ 529) and lab/discussion sections are held just along the corridor in MCZ 541.

Lab and Discussion Section: Each lab incorporates guided exploration and application of the material covered in lecture (using anatomical models and charts, and case studies) and provides a chance to examine human and primate skeletal anatomy. There are no experiments to perform or post-labs to submit. Instead, the activities you perform in the lab are ungraded and your understanding of lab material is assessed by a short, graded quiz to be completed at the end of lab. **Attendance at the combined lab and discussion section is mandatory (see below).**

Prosections: In addition to regular class meetings, we anticipate that there will also be three visits to the Harvard Medical School to observe the heads, thorax, and limbs of dissected human cadavers. These visits are held out of normal section hours and after 6 pm. While strongly encouraged, your **attendance is optional**. Past students have listed the prosections as a highlight of the course as viewing human anatomy *in situ* is particularly informative.

Office Hours: Drs Clark-Matott and Allen-Blevins will each hold two hours of scheduled office hours each week (TBA). Office hours are a scheduled time to interact with us. Please do not feel like you need a “good” question or reason to attend office hours – you can just pop in to say hello and to listen to what other students are discussing. If you would prefer to meet outside of scheduled office hours, then please email us to arrange a time to meet.

REQUIREMENTS

Pre-Class Assignments: Learning anatomy is hard and requires frequent interaction with the material. To help provide a framework for your study, most lectures are associated with a task that should be completed in advance of the lecture (such as filling in a table of muscle names, functions and origin and attachment points, listening to a podcast, or extracting information from a website). Pre-class assignments (PCAs) will comprise 15% of the course grade and will be graded for completion rather than accuracy. PCAs that are submitted after lecture and before midnight on the day of lecture without prior approval will incur a penalty of 50% of that assignment's value.

Although PCAs require more work before class, the trade-offs include increased retrieval practice (which has been shown to increase information retention) and more interactive class sessions. Our goal is to create a comfortable learning environment that encourages our community of anatomy learners to interact frequently and to establish relationships for peer-to-peer learning.

Post-Section Quizzes: Most lab/discussion sections will have a short quiz at the end (consisting of 2 questions/picture IDs). Each quiz will be worth 1% of the final course grade for a total of 10%. Post-Section Quizzes (PSQs) will be graded for accuracy. PSQs should be completed at the end of lab and will not be graded if submitted more than two hours after the end of lab.

Exams: There will be four exams in this course (including the final). Each will have a common format consisting of identifications, short answer questions, and multi-part synthetic questions that will require you to integrate the anatomy and anatomical principles that you have learned to date. Together, the exams comprise 60% of your final grade. Make-up exams will be provided in accordance with current Harvard College policies.

Attendance: While class and prosection attendance are crucial for success in this course, only lab attendance is mandatory. If you are unable to attend a lab, please contact Dr. Allen-Blevins as soon as possible. **Unexcused lab absences will result in a failing grade in the course.**

Anatomical Project: This course culminates in a 5- to 10-page anatomical report of a disease or common human injury. Your report should contain detailed anatomical description and discuss the developmental, functional, and evolutionary context of the disease/injury. In addition, you will present an outline of your proposed (or completed!) project to your section during week 12. Projects are **due on the last day of class** (Tuesday, April 23rd) and comprise 15% of your final grade (see Canvas for more information). *We recommend that you begin (and complete!) this project well in advance of the final deadline.*

Anatomical Atlases: Countway Library has useful anatomy resources that you should use heavily as we progress through the course, and as you work on your anatomical project. All are accessible using your HarvardKey credentials. There are two 'point and click' anatomical atlases that you should utilize for muscle table pre-class activities that require the origin, insertion, innervation, and function of the muscles in a particular region to be listed. The interactive atlases are [AnatomyTV](#) and [BioDigital Human](#). AnatomyTV should be ready to use as soon as you login with your HarvardKey whereas BioDigital Human requires that you set up a free account. We recommend that you familiarize yourself with both apps before the beginning of the semester.

Digital atlases are useful for quickly finding information on a particular anatomic structure. However, you should also familiarize yourself with more classical depictions of anatomical structures since these tend to appear on the identification section of exams. Countway has a collection of anatomy textbooks that are available to use online. You should bookmark [Countway Library's Digital Anatomy Resources](#) and frequently refer to the resources listed. We recommend **Netter Atlas of Human Anatomy** (the fifth resource on the list) and **Gray's Anatomy for Students** (the third resource on the list).

HOW TO BE SUCCESSFUL

Required Skills: Persistence, and the ability to independently study and learn complex structures. *This is a challenging course!* While the material is straightforward, like all anatomy courses it requires significant amounts of memorization. This is not a process that can be rushed. The challenge for 1420 students is keeping up with the material. As the semester progresses, anatomical terms and structures pile up quickly. While the exams are not cumulative, there is enough material in each module that only studying the weekend before the exam is not sufficient to achieve the highest grades. If your plan is to achieve high grades in this course, we suggest studying and memorizing the structures presented in lecture and lab section for a few hours **each week**.

Grading policy: Assignments and exams are graded according to absolute standards i.e., are not curved. The overall letter grade for the course is assigned according to standard grade boundaries (see below). Individual participation/effort/learning curve is considered if your final score falls just below a grade boundary. Please note that if your final grade is borderline, we will have already considered your participation/effort/learning curve and an email follow-up is unlikely to result in any change. The grade boundaries listed on the next page are firm, but should the whole class perform poorly on Exams 1-3 students will be offered the opportunity to 'redo' a page from two of these exams during the 3-hour period of Exam 4.

Grade	Range (%)	Grading Criteria
A	100-93	Earned by work whose excellent quality indicates full mastery of the subject and is of extraordinary distinction.
A-	92.9-90	Earned by work whose excellent quality indicates full mastery of the subject.
B+	89.9 – 86	Earned by work that indicates excellent comprehension of the course material, excellent command of the skills needed to work with the course material, and the student's full engagement with the course requirements and activities.
B	85.9-83	Earned by work that indicates very good comprehension of the course material, very good command of the skills needed to work with the course material, and the student's full engagement with the course requirements and activities.
B-	82.9-80	Earned by work that indicates good comprehension of the course material, good command of the skills needed to work with the course material, and the student's full engagement with the course requirements and activities.
C+	79.9-76	Earned by work that indicates adequate and satisfactory comprehension of the course material and the skills needed to work with the course material and that indicates the student has met the basic requirements for completing assigned work and participating in class activities.
C	75.9-73	
C-	72.9-69	

Getting help: *Learning anatomy is hard!* In addition, you may also find that you have not encountered courses where learning a large amount of material is necessary for the application and synthesis of the material and concepts. Drs Clark-Matott and Allen-Blevins are here to help you. Please come see us early and often with any questions about the material, study tips, and/or any problems you are having. If you feel that you are falling behind, please let us know sooner rather than later. We want you to succeed and to enjoy learning the material!

LAB and DISCUSSION SECTION INFORMATION

Section Times: *Thursday afternoon and evening (3:45 pm – 5:45 pm & 6:00 pm – 8:00 pm) & Friday morning and afternoon (9:45 am – 11:45 am & 12:45 – 2:45 pm)*

LAB and DISCUSSION SECTION SCHEDULE

Date	Lab & discussion topic
Jan 25 th & 26 th	Lab 1: Fossils and Bones
Feb 1 st & 2 nd	Lab 2: Muscles and Biomechanics and the Nervous System
Feb 15 th & 16 th	Lab 3: Skull, Brain, and Sensory Systems
Feb 22 nd & 23 rd	Lab 4: Muscles of the Head, Face, and Neck
TBA	HMS Prosection 1
Feb 29 th & Mar 1 st	Lab 5: Teeth and Head Evolution
Mar 21 st & 22 nd	Lab 6: Back, Thorax, and Abdomen
TBA	HMS Prosection 2
Apr 4 th & 5 th	Lab 7: Upper Limb
Apr 11 th & 12 th	Lab 8: Anatomy Project Presentation
Apr 18 th & 19 th	Lab 9: Lower Limb
TBA	HMS Prosection 3

LECTURE SCHEDULE (*continues next page*)

Date	Lecture topic
Introduction	
Jan 23 (T)	1. Intro to evolutionary anatomy and the fossil record
Jan 25 (TH)	2. Intro to bones
Jan 30 (T)	3. Muscles and biomechanics
Feb 1 (Th)	4. Intro to the nervous system
Feb 6 (T)	Exam 1
Head	
Feb 8 (Th)	5. Skull and brain
Feb 13 (T)	6. Brain and cranial nerves
Feb 15 (Th)	7. Sensory anatomy
Feb 20 (T)	8. Face
Feb 22 (Th)	9. Neck
Feb 27 (T)	10. Teeth and Mastication
Feb 29 (TH)	11. Head Evolution
Mar 5 (T)	Exam 2

Trunk	
Mar 7 (Th)	12. Back
Mar 12 (T)	<i>NO CLASS</i>
Mar 14 (Th)	<i>NO CLASS</i>
Mar 19 (T)	13. Thorax
Mar 21 (Th)	14. Abdomen
Mar 26 (T)	15. Trunk evolution
Mar 28 (Th)	EXAM 3
Limbs	
Apr 2 (T)	16. Limb development and general anatomy
Apr 4 (Th)	17. Shoulder and upper arm
Apr 9 (T)	19. Forearm and hand
Apr 11 (Th)	20. Pelvis and hip
Apr 16 (T)	21. Thigh, knee, and leg
Apr 18 (Th)	22. Ankle and foot
Apr 23 (T)	23. Limb evolution lecture (Anatomy report deadline).
TBA by Office of the Registrar	EXAM 4