

Syllabus

ANTH 240 / EEB 240: HUMAN ANATOMY

THE UNIVERSITY OF TENNESSEE – KNOXVILLE
 SPRING 2023

LECTURE: TUESDAYS AND THURSDAYS, 2:30 P.M. TO 3:45 P.M. (CLASS DOES NOT END EARLY)
 ROOM 210 ALUMNI MEMORIAL BUILDING
LABORATORY: ALL LABS MEET IN ROOM 606 HESLER BIOLOGY BUILDING

Instructor and Course Director: Dr. Steven G. Lautzenheiser, Assistant Professor

Office: 416 Strong Hall (Dr. Lautzenheiser will not be available to meet at his office)

Office Hours: Mondays 3:00 – 4:00 P.M. and Wednesdays from 10:00 – 11:00 A.M.

All meetings are conducted via **Zoom**. Sign up via **e-mail** to Dr. Lautzenheiser at least one day before meeting.

E-mail: slautzen@utk.edu (Dr. Lautzenheiser does not read e-mails between 8 PM & 8 AM.)

Lab instructors:	Dr. Sharon Clemmensen	sclemmen@utk.edu
	Ms. Megan Kleeschulte	mkleesch@vols.utk.edu
	Ms. Kelsey O’Neill	koneill5@vols.utk.edu
	Ms. Marta Paulson	mpaulso1@vols.utk.edu
	Ms. Rachel Robrecht	rrobrech@vols.utk.edu
	Ms. Jenna Watson	jwatso58@vols.utk.edu
	Mr. Gregory Wehrman	gwehrman@vols.utk.edu

- **Lab instructors do not reply to questions about lecture assessments except for emergencies.**
- **Lab instructors do not have office hours but are available during scheduled lab meeting hours and via e-mail to address any of your concerns or questions.**

Lab sections, meeting times, and instructors:
 (M, Monday; T, Tuesday; W, Wednesday; R, Thursday; F, Friday)

Day	Time Period		
	8:00 – 11:00 (MWF) 8:10 – 11:00 (TR)	11:30 – 2:30 (MWF) 11:20 – 2:10 (TR)	5:20 – 8:20 (MTWR)
MONDAY	Section 7 Wehrman	Section 8 Wehrman	Section 11 Robrecht
TUESDAY	Section 1 Watson	Section 2 Watson	Section 12 Paulson
WEDNESDAY	Section 3 Clemmensen	Section 4 Clemmensen	Section 13 Robrecht
THURSDAY	Section 5 Kleeschulte	Section 9 Kleeschulte	Section 14 Paulson
FRIDAY	Section 6 O’Neill	Section 10 O’Neill	

READ THIS: ESSENTIAL INFORMATION ABOUT THE COURSE

What is the attendance policy for this course?

- To ensure your safety and the safety of your fellow students, **do not come to class if you have tested positive for COVID-19, are feeling unwell (have a fever, chills, cough, etc.), or are in isolation due to exposure.** If you are unsure about whether you should attend class, **err toward caution,** and stay home. **You will be accommodated if you get sick!**
- With this stated make every effort to attend all course meetings and maximize your time in the lab. Attendance is its own reward.
- Specific attendance policies for the lab are explained below in the syllabus and Lab Guidelines.

What is the make-up policy for the course?

- Should you need to miss class due to illness, a family emergency, as well as legitimate athletic, religious, legal, or medical reasons, you will be accommodated.
- **Please contact Dr. Lautzenheiser before lecture, and both Dr. Lautzenheiser and your lab instructor before your lab section meets, should you need to miss either.**
- More details may be found about the make-up policy at the end of this syllabus.

What should I do to be prepared for class meetings?

- **Bring copies of the PowerPoint slides to lecture, either printed out on paper or on a computer.** This way you can take notes on the slides and annotate them as they are discussed.
- **By staying current or even ahead of the information we are discussing in lecture, you will not get behind in the course content and will not feel overwhelmed when assessments come up.**
- Anatomical science consists of two major areas of learning: visual images and terminology. Focus on these areas, and linking terms with images, models, and the cadavers.
- At minimum, *before* lectures, read the relevant chapters in *Anatomy: An Essential Textbook*. Download and look at the slides, and start to learn the terminology. Look at images of the anatomy in your atlas and the textbook.

What should I expect in lecture?

- Lectures cover terminology, the form and basic functions of anatomical structures, some physiology, and the relative positions of those structures.
- Dr. Lautzenheiser moves at an even but quick pace, though information is generally repeated throughout lectures. **Many students find making audio recordings of lectures useful for notetaking and review.**

What should I expect in lab?

- Labs help you bring the visual information and terminology you learn in the lecture and apply it to models and the actual anatomy as found in cadavers. Your instructor will help guide you.
- In the lab, you will guide and organize your own studies for half the time to learn terminology, identify it on models, and work with classmates in developing effective study techniques.
- Structured lab time will consist of group learning with models & worksheets, and cadaveric anatomy presentations by instructors.

What's the best way to study for this course?

- Broadly, the best way to study is to learn a little each day. Treat anatomy like you are studying a foreign language. The terminology is akin to vocabulary, and the lectures provide the grammar for understanding how to relate these terms to structures, their relationships, and their function.
- See the advice at the end of this syllabus for more detailed advice about study techniques and tools that will help you learn.

Course description and objectives: Anatomy is at the core of all healthcare & medical practice, as well as the foundation for many research specialties in biological sciences and in engineering. This course is designed to give you a comprehension of human anatomy for general knowledge (it never hurts to know your own body!) and clinical application. We will be exploring the basic layout (or *bauplan*) of the human body, as well as the functions and relationships of the structures of the body. These will be tied to disease (pathology) and some clinical applications.

Anatomy is taught *regionally* (not by systems) in this course. For example, when you will be learning the anatomy of the thorax, you will study all the visceral (e.g., heart and lungs), vascular (arteries and veins), nervous (sensory, motor, and special function), lymphatic (thoracic duct), skeletal (e.g., ribs, vertebrae), and muscular (e.g., intercostalis, serratus) structures in that region. However, you will be expected to integrate knowledge of one compartment of the body with other regions; cranial nerves originating in the brain, for example, innervate structures in the neck, the thorax, and the abdomen.

By the end of the course, you will

- have knowledge of human anatomical structures, their location in the body, and their spatial and functional relationships;
- learn how to integrate this knowledge with some clinical applications;
- develop an appreciation for variation in some anatomical structures among humans.

Course web site: All course materials, lecture slides, lab materials, and supplemental study materials are on Canvas (utk.instructure.com). Several very useful resources will be available on Canvas. You are strongly advised to access the site often. **All course announcements will be posted to Canvas, including any schedule changes.**

Required texts:

Gilroy, Anne M. 2021. *Anatomy: An Essential Textbook*. **Third edition**. New York: Thieme Medical Publishers, Inc. ISBN: 9781684202591. (This is available through the UT Bookstore.)

Gilroy, Anne M. 2020. *Atlas of Anatomy*. **Fourth edition**. New York: Thieme Medical Publishers, Inc. ISBN: 9781684202034. (This is available through the UT Bookstore.)

YOU MAY PURCHASE THESE BOOKS AS USED COPIES; YOU DO NOT NEED ACCESS TO THE DIGITAL MATERIALS.

Additional material will be made available as PDFs on the Canvas site. **Terms lists for learning from models and cadavers will be made available on Canvas, which you will need in the lab sessions.**

Please note: **Wikipedia and the internet in general is not a good study resource.** (Few anatomists ever review most web sources for accuracy!) Always refer to your textbook and lecture slides for reliable anatomical information. Direct all course content questions to Dr. Lautzenheiser.

Course structure: We will meet twice a week for lectures. You are required to attend your lab section during its weekly meeting time. In lecture, we will be covering and clarifying information about general anatomy. The lecture PowerPoint presentations will be made available to you on Canvas before each lecture. Laboratories will give you the best opportunity to have practical experience with the anatomy by using structured scenarios and group-based learning, prosected cadavers, diagrams, and models to understand the physical arrangement of the structures that we discuss in lecture.

Attendance: Barring illness or legitimate excused absences (cleared with Dr. Lautzenheiser), you are expected to attend all lectures and your assigned labs. *See the lab section change policy below.* It is to your benefit to attend both lecture and lab. Note that, even though PowerPoint slides will be provided for you on Canvas, ***no lecture notes or outlines will be made available online.*** **You should therefore take notes in lecture.**

Copyright: By enrolling in the course, you, as a student, agree that you will not publish, share, or otherwise disseminate any course content to anyone—except for others currently enrolled in the course—without the explicit, written permission of the professor and lab instructors. **This includes not posting to websites, including Study Blue and CourseHero, that provide shared study materials.** Recordings may be shared with any individuals who are currently enrolled this semester in the course. Students who are found to violate this policy are subject to disciplinary action, including the potential to receive a failing grade in the course.

Lab attendance: Students who have had the greatest success in the course use all the resources available in the lab. **Lab attendance is important for success in learning anatomy.** *If you cannot attend lab due to illness or excused absences, you will have opportunities to make up missed lab sections.* Study ahead of lab time! Bring questions from your studies to lab meetings! You are required to attend the lab section in which you are enrolled. Exceptions for permanent assignment to a lab section are made on a case-by-case basis by Dr. Lautzenheiser for those students who have a semester-long schedule conflict. However, *all* students are eligible for temporary section switches on a week-to-week basis with instructor permission.

Lab section switching

If on a given week you know in advance that you cannot attend your assigned lab section, you are eligible to attend a different section, **but only after being given explicit permission.** To get permission, first identify which alternative lab section you would be able to attend. **E-mail both your lab instructor and the lab instructor for the alternative lab section, and copy Dr. Lautzenheiser, asking for permission to switch lab sections for that week.** **You must get permission from both lab instructors** (or the one instructor if the same person teaches both sections). For that week only, you would then be able to attend a different section.

Students violating or abusing this system will be subject to disciplinary action by Dr. Lautzenheiser.

Recording of lectures: You are allowed to make **audio recordings** of lectures while in class. **Should you need to miss class**, whether for illness or other reasons, please contact Dr. Lautzenheiser before class so he is aware of your situation and can give permission for a planned absence. In these instances, a video recording of the lecture will be made available to you. Please follow the copyright policy above and do not share any recorded materials you produce or receive. You may also wish to coordinate with another student who is attending lecture to obtain notes and an audio recording of the lecture that they make.

Academic honesty: Simply, don't cheat. Anatomical knowledge is an awesome asset, and it is hoped that you will find the discovery of this information extremely rewarding. Many of you will require this knowledge in your future careers and coursework. Any student caught cheating on any assignment or assessment will be given a score of zero. **Cheating constitutes any collaboration with another student when it is not expressly permitted (we *can* tell!), as well as use of notes, textbooks, or other resources when it is not specifically allowed.**

Evaluation

Graded materials for this course consist of assessments, quizzes, and group-learning connection worksheets. **Late assignments will *not* be accepted except for circumstances.** There are five lecture assessments, three practical assessments, and ten unscheduled quizzes that occur in lecture. Here are the details about each.

All lecture assessments will be administered *in class* on the dates listed in the Course Schedule at the end of this syllabus. Lecture assessments, *except the first one*, are worth up to 150 points each and consist of a variety of question types. The first lecture assessment is a short exam with 50 points; this assessment will give you an idea of the format of the other lecture assessments in the course.

Unscheduled quizzes will take place throughout the semester at the end of class. Each is worth five points and will **take place via clicker in class.** You will be able to make up these quizzes if you are sick or have an excused absence.

In lab, there will be two unscheduled quizzes in your lab section that will be bonus points. Practical assessments, of which there are three, take place when your lab section meets and are worth 50 points each. Assessment dates are listed on the course schedule. **Note that you will have lab time after each practical assessment, so plan to use that time to get a jump start on the next section of the course!**

In addition, in the lab, you will participate in group-learning worksheet assignments. These will use clinical and other applied anatomy connections, which you will encounter in association with the models in the lab. Working in small teams (2-3 individuals), you will be responsible each week to complete a worksheet that will be submitted to your lab instructor for a grade. These worksheets will be graded for accuracy and completion, and will be worth 20 points each.

Extra credit Canvas quizzes will be available to help you prepare for lab and link labs to the lecture material. There is one quiz per lab (not including weeks of the lab practicals), **each quiz is only available for 7 days and close when your lab begins.** These quizzes are untimed and can be taken multiple times

before the quiz closes. Extra credit Canvas quizzes will not be reopened after they close for any reason. **Extra points in the course may only be earned on extra credit Canvas quizzes, unscheduled lab quizzes, or bonus questions on assessments.**

Here is a breakdown of the points associated with all assessments, quizzes, and assignments:

Short exam on systems and the thorax	50 pts.
Thorax, abdomen and pelvis & perineum (TAPP) lecture assessment	150 pts.
Thorax, abdomen and pelvis & perineum (TAPP) lab practical assessment	50 pts.
Back and limbs lecture assessment	150 pts.
Back and limbs lab practical assessment	50 pts.
Head and neck lecture assessment	150 pts.
Head and neck lab practical assessment	50 pts.
In-lab group-learning scenarios (20 points each, 10 labs)	200 pts.
Unscheduled in-lecture quizzes (10 quizzes, 5 points each)	50 pts.
TOTAL POINTS AWARDED IN COURSE	900 pts.*

*There are a total of **850 points that are calculated for your final grade** available in the course. **Your lowest 50-point assessment score (any lab practical assessment or the short exam) will be excluded from the final course grade.** No curve will be applied to the grades. Assessments are not cumulative in the strictest sense, though you will need to recall anatomy from other regions throughout the body in each subsequent assessment to answer some questions. The grade scale is:

Letter grade	Percent grade	Points
A	91.5-100%	777-850
A ⁻	90.5-91.4	769-776
B ⁺	89.5-90.4	760-768
B	81.5-89.4	692-759
B ⁻	80.5-81.4	684-691
C ⁺	79.5-80.4	675-683
C	71.5-79.4	607-674
C ⁻	70.5-71.4	599-606
D ⁺	69.5-70.4	590-598
D	61.5-69.4	522-589
D ⁻	60.5-61.4	514-521
F	<60.5	<514

FINAL GRADES ARE NOT NEGOTIABLE

Students with special needs: If you require accommodation because of special needs in learning, please contact the Office of Disability Services at 2227 Dunford Hall (974-6087). Arrangements will be made to adjust assessments to fit your needs.

Make-up policy: **If you become sick (with COVID-19, flu, or other cause) you will be accommodated.** Legitimate athletic, religious, legal, or medical reasons all qualify for eligibility to make up assessments, quizzes, and other assignments in the course. If you must miss a lecture assessment or quiz, you must contact Dr. Lautzenheiser *before* the assessment or quiz is administered. If you must miss a practical assessment, you must contact your laboratory instructor **and** Dr. Lautzenheiser *before* lab practical assessments are administered. Dr. Lautzenheiser will work with you to schedule make up assessments.

Additional Tools for Learning Anatomy

Tutoring: Tutoring is available through the UT Academic Success. Contact them through their website to register to arrange a private or group tutoring session: <https://studentsuccess.utk.edu/academicsuccess/>.

Visible Body and model guides: In addition to learning from models in the lab, you will have the opportunity to learn anatomy from virtual models and online learning tools. The best of these tools is Visible Body, online software freely available via the UT Libraries. You may access the main link to the Visible Body suite of software at <http://s.lib.utk.edu/visiblebody>. This page has links to the virtual 3D atlas and the muscle movement atlas. These are excellent tools for helping you learn the three-dimensional relationships of anatomical structures. Dr. Lautzenheiser has a video on Canvas that walks you through using Visible Body. In addition, on Canvas you will find many still photographs of models, which will show you structures from your terms lists on the many plastic anatomical models we typically use in the lab. **Use these resources in conjunction with your anatomical atlas and the textbook!**

Anatomage Table: The UT Library has a virtual cadaver table that you can use to supplement your anatomy learning. Dr. Lautzenheiser has made custom dissections for undergraduate anatomy that you may use with the table. You must make reservations to use the table through the LibCal system. Groups of up to four students may access the table per 30-minute session after completing a tutorial for its use. More details are on the library website: <https://libguides.utk.edu/anatomytable/access>.

Study Advice From Dr. Lautzenheiser

Any course on human anatomy is challenging but rewarding. Many of you are taking this course in preparation for a professional career in which some anatomical knowledge will be essential. Even if you are not taking this for professional reasons, knowledge of your anatomy has long-term practical use. **So, remember that you are not learning this information for the assessment, but for the rest of your life, professional or otherwise.**

Students over the years have regularly asked for specific advice on how to study for the course. While some depends on the methods that best work for you, some general methods work for everyone. Here are my study tips for getting the most out of anatomy, gleaned from years of your predecessors in this course.

- **Be prepared before you come to lectures.** Students who have the most success in the course at least skim the textbook *prior* to attending lectures. Do not attend lectures passively; actively take notes, ideally with a printout or digital file of the slides that you can annotate. Be familiar with the terms before you see them in lecture, so you aren't hearing them for the first time.
- **Use yourself as a study model.** Think of your own body as you're learning about the positions of structures. Move your limbs as you learn about muscles and their actions. Palpate bony landmarks to help you associate the anatomy.
- **Treat my lectures as virtual highlighters for the textbook.** You should focus first on the terms & structures that I highlight in the lecture. These are the large font text terms I present in the slides or verbally emphasize repeatedly. Your textbook will reflect what I discuss about these structures and their functions. In all cases, you should: 1) know what a structure or term is referring to; 2) know the location of that structure; and 3) know something about its function.

For example: The heart has coronary arteries, which are located just superficial to and within the heart's muscular walls. These blood vessels carry oxygenated blood and nutrients to the heart muscle in the walls of the heart. I will mention a couple specific branches in class (right and left coronary arteries; anterior & posterior interventricular arteries) and their courses along the outside of the heart. This is the level of detail you will need to know.

- **Study now and learn anatomy as you would a foreign language—a little bit each day.** I realize that you all have other classes and commitments, but you need to devote time to studying your anatomy now. Remember, as with a foreign language, you need to spend time studying new material each day. Breaking the information into smaller pieces will help you; don't try to learn it all at once! In any section of the course, start with the skeleton and the ligaments. For the TAPP, we discuss less of the skeleton than we will in the next two sections of the course (back & limbs and head & neck), but it's always best to start learning the skeleton. Then take time to learn the nerves and blood vessels along with groups of muscles. Finally, focus on the organs, both their anatomy and basic function. Study by compartment. Use the lecture slides and the textbook to help you with these. You should already have started studying; waiting until Monday night each week to start to study material will

not help you learn the anatomy thoroughly enough to remember it long term. *If you wait, you will quickly get behind.*

- **Maximize your study time outside of formal course hours, as well as in lab.** You want to know the terms list and have looked up all the structures in your atlas and textbook before you attend lab sections. This way, you have given yourself time to find structures on Visible Body, your atlas, and model photographs, and if you cannot find them, you want to get help during lab time from your instructor. Don't spend your time in lab meetings reading about the structures for the first time. You'll find that in learning the structures in the lab, you will be studying at the same time for the lecture portion of the course.
- **Contact your lab instructors and me with specific questions.** We are available to help you understand anatomy, but we cannot help if you don't let us know what questions you have. I am available for Zoom office hours (see page 1) and by occasional virtual appointment. I am always available via e-mail. **I am happy to talk about study methods and your concerns; don't be intimidated or afraid to talk to me!**
- **Constantly quiz yourself.** The more you practice the quick recall of information, the more comfortable you will feel about the material and the better you will be able to recall it efficiently. The tests reflect the content covered in my lectures, in the lab, and in the textbook.
- **Plan on an approach to taking the assessment. Assessments should take no more than 90 minutes to complete if you've kept up with your studies, and without needing assistance from notes or the textbook.** Before answering questions, look over the assessment and come up with a plan on how you will approach it. Make sure to schedule time to take the assessment in a quiet place without distraction. Turn off your phone or place it in "Do Not Disturb" mode! The more you are able to focus, the easier you will be able to recall information.
- **USE SUPPLEMENTARY LEARNING MATERIALS TO PREPARE.** On Canvas I have provided links to multiple outside resources, especially those that will help you with organizing terms and concepts, and those that help with comprehending three-dimensional relationships among structures.

Course schedule: Assigned readings are in Gilroy's *Anatomy: An Essential Textbook*. Highlighted dates (red=lecture; gold=lab) are assessments.

Week	Date	LECTURE	Assigned reading	Lab (weekly session)
1	24-Jan	1. Introduction to the course 2.1 An overview of systemic anatomy	Syllabus Chapter 1.1-1.9, 3.2	No Labs
	26-Jan	2.2 The nervous system 3.1 The thoracic wall and thoracic regions	Chapter 1.10 Chapter 6	
2	31-Jan	Finish lecture 3.1 3.2 The pulmonary cavity and lungs	Chapter 8	Lab orientation Systems and introduction to the lab TAPP I (thorax)
	2-Feb	3.3 The mediastinum and heart	Chapter 7	
3	7-Feb	4.1 Abdominal wall and inguinal region 4.2 The peritoneal cavity and overview of organs	Chapter 10 Chapter 11.1	TAPP II (abdomen)
	9-Feb	Systems & thorax short assessment		
		4.3 Organs of the abdominal cavity	Chapter 12.1-12.2	
4	14-Feb	Finish lecture 4.3 4.4 Posterior wall of the abdomen 4.5 Vasculature and nerves of the abdomen	Chapter 12.3 Chapter 11.2	TAPP III (pelvis & perineum)
	16-Feb	5.1 Pelvic osteology & muscles; the perineum	Chapter 14.1-14.3 Chapter 16	
5	21-Feb	5.2 Pelvic organs	Chapter 15	TAPP practical assessment Start to learn lower limb after exam
	23-Feb	5.3 Blood vessels and nerves of the pelvis Review of the TAPP	Chapter 14.6	
6	28-Feb	TAPP assessment		LIMBS I (lower limb)
	2-Mar	6.1 Introduction to the limbs 6.2 The thigh	Chapter 21 Chapter 22.1-22.3	

Week	Date	LECTURE	Assigned reading	Lab (weekly session)
7	7-Mar	Finish lecture 6.2 6.3 The knee and the leg	Chapter 21 Chapter 22.4-22.7	LIMBS II (lower & upper limbs)
	9-Mar	6.4 The foot and gait	Chapter 22.7-22.8	
8	14-Mar 16-Mar	No Class		No Labs
9	21-Mar	7.1 The back 7.2 Brachial plexus and upper limb vasculature	Chapter 3.1-3.4 Chapter 18.4	LIMBS III (upper limb)
	23-Mar	Finish lecture 7.2 7.3 Muscles of the arm and the elbow	Chapter 18.1-18.3 Chapter 19.1-19.3	
10	28-Mar	Finish lecture 7.3 7.4 The forearm	Chapter 18.1-18.3 Chapter 19.4	Back and limbs practical assessment Start to learn head and neck after exam
	30-Mar	Finish lecture 7.4 7.5 The hand	Chapter 18.1-18.3 Chapter 19.5-19.6	
11	4-Apr	7.6 Pathologies of the upper limb <i>Review of the back and upper limb</i>		No Labs
	6-Apr	No Class		
12	11-Apr	Back and limbs assessment		
	13-Apr	8.1 Bones of the cranium and mandible 8.2 Superficial facial anatomy and blood flow	Chapter 24.1 Chapter 24.3	HEAD AND NECK I (cranial skeleton)

Week	Date	LECTURE	Assigned reading	Lab (weekly session)
13	18-Apr	8.3 The brain and meninges 8.4 The cranial nerves, part I	Chapter 26.1-26.3	HEAD AND NECK II
	20-Apr	Finish lecture 8.4 8.5 The cranial nerves, part II	Chapter 26.3 Supplemental materials on canvas	
14	25-Apr	Finish lecture 8.5 8.6 Ventricles and cerebrospinal fluid 8.7 Anterior and deep neck	Chapter 26.2 Chapter 25.1-25.4	HEAD AND NECK III
	27-Apr	Finish lecture 8.7 8.8 Nasal and oral cavities, and introduction to the pharynx	Chapter 27	
15	2-May	8.9 Pharynx 8.10 Larynx	Chapter 25.5-25.7	HEAD AND NECK IV
	4-May	8.11 The eye	Chapter 28	
16	9-May	8.12 The ear <i>Review of the head and neck</i>	Chapter 28	No Labs
Final Lab Assessment	12, 15 & 16 May	Head and Neck practical assessment <i>(Sign up for a time via canvas)</i>		
Final	17-May	Head and neck assessment		
	1:00 – 3:00 P.M.			