

## ANATOMY 411: Gross Anatomy Spring 2023

Lecture: Recorded and asynchronous (on Canvas)

Lab: M/W/F 1:00-4:00 pm, EG20/24

### Instructors

Darin A. Croft, PhD (Course Director), EG-03; 368-5268, [dac34@case.edu](mailto:dac34@case.edu)

Andrew Crofton, PhD; EG-07; [arc79@case.edu](mailto:arc79@case.edu)

Rebecca Enterline, MS; WG-46, HEC-226B; [rx100@case.edu](mailto:rx100@case.edu)

Meghan Newcomer, PhD; EG-26; [mmf109@case.edu](mailto:mmf109@case.edu)

Scott W. Simpson, PhD; EG-23, 368-1946, [sws3@case.edu](mailto:sws3@case.edu)

Bryan Singelyn, MS; WG-46A, 368-0192, [bms103@case.edu](mailto:bms103@case.edu)

Sue Wish-Baratz, PhD; HEC-226D, 368-6667, [sxw195@case.edu](mailto:sxw195@case.edu)

### Teaching Assistants

Ballentine, Olivia; [olivia.ballentine@case.edu](mailto:olivia.ballentine@case.edu)

Giang, Peter; [peter.giang@case.edu](mailto:peter.giang@case.edu)

Onabiyi, Ashley; [ashley.onabiyi@case.edu](mailto:ashley.onabiyi@case.edu)

Samba, Zeyna; [zeyna.samba@case.edu](mailto:zeyna.samba@case.edu)

Truong, Valerie; [valerie.truong@case.edu](mailto:valerie.truong@case.edu)

### Course Schedule:

<u>DATE</u>	<u>LECTURE TOPIC</u>	<u>LAB (Grant's Dissector sections)</u>	<u>FACULTY</u>
	<b>THORAX</b>	Introduction, Ch. 3 (and 2), Grant's Dissector	
Jan. 18	Introduction, nervous system overview	(no lab) *In-person course introduction in E301*	Croft
Jan. 20	Anterior thoracic wall	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• Pectoral region (Ch. 3)</li> <li>• Muscles of the pectoral region (Ch. 3)</li> </ul>	Croft
Jan. 23	Pleural cavity and lungs <b>*Nervous system quiz*</b>	<ul style="list-style-type: none"> <li>• Intercostal space and intercostal muscles</li> <li>• Removal of the anterior thoracic wall; the pleural cavities</li> <li>• Lungs</li> </ul>	Croft
Jan. 25	Heart and mediastinum	<ul style="list-style-type: none"> <li>• Mediastinum</li> <li>• External features of the heart</li> <li>• Internal features of the heart</li> </ul>	Croft
Jan. 27	Posterior and superior mediastinum	<ul style="list-style-type: none"> <li>• Superior mediastinum</li> <li>• Posterior mediastinum</li> </ul>	Croft
Jan. 30	Review	<b>*Practice practical exam*</b>	Croft
Feb. 1	<b>Thorax Lecture Exam</b>	<b>Thorax Practical Exam</b>	Croft
	<b>ABDOMEN</b>	Ch. 4, Grant's Dissector	
Feb. 3	Inguinal region, spermatic cord, testis	<ul style="list-style-type: none"> <li>• Superficial fascia and muscles of the anterior abdominal wall</li> <li>• Reflection of abdominal wall</li> </ul>	Singelyn
Feb. 6	Upper abdomen	<ul style="list-style-type: none"> <li>• Peritoneum and peritoneal cavity</li> <li>• Celiac trunk, stomach, spleen, liver, and gallbladder</li> </ul>	Singelyn
Feb. 8	Lower abdomen	<ul style="list-style-type: none"> <li>• Superior mesenteric artery and small intestine</li> <li>• Inferior mesenteric artery and large intestine</li> <li>• Duodenum, pancreas, and hepatic portal vein</li> </ul>	Singelyn

<u>DATE</u>	<u>LECTURE TOPIC</u>	<u>LAB (Grant's Dissector sections)</u>	<u>FACULTY</u>
Feb. 10	Kidneys and posterior abdominal wall	<ul style="list-style-type: none"> <li>• Removal of the GI tract</li> <li>• Posterior abdominal viscera</li> <li>• Posterior abdominal wall</li> <li>• Diaphragm</li> </ul>	Singelyn
Feb. 13	<b>Abdomen Lecture Exam</b>	<b>Abdomen Practical Exam</b>	Singelyn
	<u>PELVIS AND PERINEUM</u>	<u>Ch. 5, Grant's Dissector</u>	
Feb. 15	Pelvic cavity, floor, gluteal region	<ul style="list-style-type: none"> <li>• Anal triangle</li> </ul>	Singelyn
Feb. 17	Male/female perineum	<ul style="list-style-type: none"> <li>• Male/female external genitalia and perineum</li> <li>• Male/female urogenital triangle</li> </ul>	Singelyn
Feb. 20	Male/female reproductive systems	<ul style="list-style-type: none"> <li>• Male/female pelvic cavity</li> <li>• Urinary bladder, rectum, and anal canal</li> <li>• Internal iliac artery and sacral plexus</li> <li>• Pelvic diaphragm</li> </ul>	Singelyn
Feb. 22	Reproductive systems and review	(Complete dissections and review)	Singelyn
Feb. 24	<b>Pelvis and Perineum Exam</b>	<b>Pelvis and Perineum Exam</b>	Singelyn
	<u>UPPER LIMB AND BACK</u>	<u>Ch. 1-2, Grant's Dissector</u>	
Feb. 27	Bones and joints of pectoral girdle; glenohumeral joint; posterior axio-appendicular muscles; scapulohumeral muscles	<ul style="list-style-type: none"> <li>• Introduction (Ch. 1)</li> <li>• Skin and superficial fascia (up to Vertebral Column)</li> <li>• Superficial muscles of the back</li> </ul>	Wish-Baratz, Crofton
March 1	Spine; deep back	<ul style="list-style-type: none"> <li>• Skin and superficial fascia (Vertebral Column onward)</li> <li>• Intermediate and deep back muscles</li> <li>• Suboccipital region</li> <li>• Vertebral canal, spinal cord and meninges</li> </ul>	Enterline
March 3	Anterior axio-appendicular muscles; muscles of the arm; axilla; brachial plexus	<ul style="list-style-type: none"> <li>• Axilla (Ch. 2)</li> </ul>	Wish-Baratz, Crofton
March 6	Cubital fossa; bones of forearm and hand; joints of forearm, elbow, and wrist; arteries, veins, and nerves of upper limb	<ul style="list-style-type: none"> <li>• Arm (brachium) and cubital fossa</li> <li>• Scapular region and posterior compartment of the arm</li> </ul>	Wish-Baratz, Crofton
March 8	Anterior and posterior compartments of forearm; bones and joints of hand	<ul style="list-style-type: none"> <li>• Flexor region of the forearm</li> <li>• Extensor region of the forearm and dorsum of the hand</li> </ul>	Wish-Baratz, Crofton
March 10	Fascia of palm; intrinsic muscles of hand	<ul style="list-style-type: none"> <li>• Palm of the hand</li> </ul>	Wish-Baratz, Crofton
Mar. 13-17	Spring Break		
March 20	<b>Upper Limb Exam</b>	<b>Upper Limb Exam</b>	Wish-Baratz, Crofton
	<u>LOWER LIMB</u>	<u>Ch. 6, Grant's Dissector</u>	
March 22	Introduction, anterior and medial thigh	<ul style="list-style-type: none"> <li>• Superficial veins and cutaneous nerves</li> <li>• Anterior compartment of the thigh</li> <li>• Medial compartment of the thigh</li> </ul>	Simpson
March 24	Gluteal region, post. thigh, popliteal fossa	<ul style="list-style-type: none"> <li>• Gluteal region</li> <li>• Posterior compartment of the thigh and popliteal region</li> </ul>	Simpson
March 27	Hip, knee, and leg	<ul style="list-style-type: none"> <li>• Posterior compartment of the leg</li> <li>• Lateral compartment of the leg</li> <li>• Sole of the foot</li> </ul>	Simpson
March 29	Ankle, foot, and function	<ul style="list-style-type: none"> <li>• Anterior compartment of the leg, dorsum of foot</li> <li>• Joints of the lower limb</li> </ul>	Simpson
March 31	<b>Lower Limb Exam</b>	<b>Lower Limb Exam</b>	Simpson

<u>DATE</u>	<u>LECTURE TOPIC</u>	<u>LAB</u>	<u>FACULTY</u>
	<b>HEAD AND NECK</b>	<u>Ch. 7, Grant's Dissector</u>	
April 3	Overview and skull	• Cranial osteology <b>*Small group rooms*</b>	Croft
April 5	Cranial nerves	<b>*Cranial Osteology Quiz* (no lab)</b>	Croft
April 7	Face, scalp, vasculature	• Face • Parotid region	Croft
April 10	Cranial cavity	• Scalp • Interior of the skull • Removal of the brain • Dural inholdings and dural venous sinuses • Cranial fossae	Newcomer
April 12	Orbit and eye	• Orbit <b>*Group Practical*</b>	Croft
April 14	Organization of the neck	• Introduction • Anterior triangle of the neck • Thyroid and parathyroid glands	Croft
April 17	Laryngeal region	• Root of the neck	Newcomer
April 19	Ear	• Ear <b>*Group Practical*</b>	Croft
April 21	Oral region	• Temporal region	Croft
April 24	Nasopharynx	• Disarticulation of the head • Pharynx <b>*Do one or the other, not both*</b>	Newcomer
April 26	Head autonomics	(complete previous dissections)	Croft
April 28	Review	(review) <b>*Group Practical*</b>	Croft
May 1	<b>Head and Neck Exam</b>	<b>Head and Neck Exam</b>	Croft

## **Course Description**

ANAT 411 is an in-depth, cadaver dissection-based course that covers all aspects of human gross anatomy. The course is modeled after a traditional medical school gross anatomy curriculum and is divided into six stand-alone sections: thorax, abdomen, pelvis and perineum, upper limb and back, lower limb, and head and neck. By the end of the course, students will have a detailed understanding of the gross anatomy of the entire human body.

## **Class Format**

The typical class format is a one-hour framing lecture and a three-hour dissection lab, though this may vary from section to section to some extent. This is a team-taught course, and each professor has different teaching styles and preferences for resources.

Most lectures will be pre-recorded and posted to Canvas by 9 am on the day they are scheduled (some may be posted earlier). Students should plan to watch the lecture video(s) prior to lab in the afternoon. Lecture outlines and/or PowerPoint slides will be posted to Canvas. Lectures generally review concepts important for understanding the anatomy that will be seen in the dissection lab the same day. Significant clinical correlations are also discussed.

Students are assigned to a specific table for dissection, and these assignments will change during the course of the semester. There are generally four students per lab group, though in some cases there may be three or five. Labs are relatively unstructured, and lab groups are allowed to work at their own pace to complete the day's dissections using Grant's Dissector as a guide. Prior to each lab, the teaching assistants prepare a prosection so students can visualize the structures that should be exposed and identified. During lab,

teaching assistants and faculty rotate among lab groups to facilitate dissections and to help identify key structures.

**Note:** On the first day of class, the lecture content will be pre-recorded, but we will have a [synchronous course introduction in E301 at 1 pm](#). We will review the syllabus and other course procedures, introduce course faculty and TAs, and give you a chance to ask any questions you have about the course.

### **Learning Resources:**

**Textbook:** The recommended text is *Moore's Clinically Oriented Anatomy* (by Moore, Dalley, and Agur). A digital version of the 8th edition can be accessed on campus via [this link](#). Off campus, it is necessary to use the CWRU VPN client or login via CWRU single sign-on for access; instructions for using VPN are available [here](#). You can use a different textbook if you prefer. All required reading materials will be available on Canvas.

**Atlas:** An atlas is highly recommended, but any atlas is suitable. Some students prefer Netter's Atlas of Human Anatomy, whereas others prefer the Thieme atlas or Grant's. There are also photographic atlases of human anatomy. You will likely want to have one at home you can use for studying. They are also very useful in lab, but you will not want to use your home version in the lab or vice versa. A limited number of used atlases will be available for use in lab. Students can consider sharing the cost of a lab atlas among the members of their dissection group.

**Dissector:** Dissections follow *Grant's Dissector* (by Detton and Tank). A digital version of the 16th Edition can be accessed on campus via [this link](#). Some used copies of older editions will likely be available in lab. The most important structures to learn are generally those listed in Grant's Dissector in bold font.

**Digital Resources:** You will have access to two digital resources during this course: Complete Anatomy 2020 (from 3D4Medical) and the VH Dissector (from Touch of Life Technologies). Complete Anatomy is excellent for 3D visualization of anatomical structures, and VH Dissector is very useful to understanding positional relationships through axial, coronal, and sagittal sections.

### **Lab Supplies**

You should obtain the following equipment before the first lab:

**Gloves:** Be sure to purchase nitrile (non-latex) gloves. Latex can cause an allergic reaction and does not hold up well against formaldehyde. Purchase whatever thickness you prefer. You will find that dissection is difficult if your gloves are too large, so be sure to purchase the correct size.

**Shoes:** Purchase an inexpensive pair that you can use exclusively in lab. You should get something that you will be comfortable standing in for several hours that has good traction and that does not have large holes (in case of spills).

**Scrubs:** Students registered for the course will be able to obtain scrubs free of charge in E430. Soiled scrubs must be returned to the same room. Students are not permitted to use their own scrubs, as soiled scrubs should not be removed from SOM facilities.

**Goggles or other protective eyewear** can be used but is not required.

If you would like to use a respirator in lab, one can be purchased through CWRU.

## **Lockers**

You will be assigned a hallway locker on the fourth floor of Robbins where you can store items during and between labs. These lockers have built-in combination locks, so you cannot use your own. If you took ANAT 401 (Multimodal Human Anatomy) in the fall, you will be assigned the same locker.

## **Assessment and Grading**

Graduate and undergraduate students must take the course for a letter grade. Medical students may take the course pass/fail.

You will receive a separate score for each section of the course; there is no cumulative final exam at the end of the course. Each section of the course contributes to the final grade as follows: Thorax: 15%; Abdomen: 12.5%; Pelvis and perineum: 12.5%; Upper limb and back: 15%; Lower limb: 15%; Head and neck: 30%.

Each section will have a final lecture exam and a final lab exam that will contribute equally to a student's score for that section of the course. The format of the lecture exam will vary by section according to the preferences of the faculty member(s) teaching that section. Lab exams are practical exams in which students rotate among stations every 75 seconds; at each station, two tagged structures must be identified. Most of the stations are cadaver-based, but models, cross-sections, x-rays, CT scans, bones, and other learning resources may also be used. In some sections of the course, quizzes may contribute to a student's lecture and/or lab score. Additional details for each section of the course will be provided by the faculty member(s) in charge of that section. Extra credit is not offered.

Letter grades are generally assigned as follows: A, 90-100%; B, 80-89%; C, 70-79%; D, 60-69%, F, 59% and below. These are not absolute cutoffs and may be adjusted slightly depending on overall class performance. Course trajectory is taken into account when final grades are assigned, meaning that a strong finish to the course will help a borderline score. The passing score for a medical student is 80%.

## **Course-specific policies**

You are expected to be present for all labs and to participate in dissection. This is not simply a learning issue, it is a professionalism issue. If you will not be present for a lab, you should let your lab members know in advance (if possible) and arrange a time to contribute to the dissection in another way and/or review the material that was missed.

Lecture quizzes and exams will be administered during a prescribed interval. In general, you may take a quiz in advance if necessary, but quizzes may not be taken late except in extraordinary circumstances (e.g., serious illness or death of an immediate family member). If you need to take a quiz in advance, contact the faculty member responsible for that particular section of the course (if different from the course director). Practical exams require a great deal of time to set up, so these must be taken on the day and time they are offered. In the event of an emergency, a modified version of the practical exam will be given.

## **Diversity and Inclusion**

It is the intent that all students, regardless of their background and perspective, be well-served by this class. Further, we intend to present material that is respectful of diversity (gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture) and deliver it in a way that respects these differences. We expect that all students, instructors, and guests will help foster an atmosphere of respect, trust, and safety in the classroom.

Students should reach out to an instructor with any suggestions for how to make class content or environment more inclusive or to report a specific incident. If you are not comfortable reaching out to an instructor, you can contact the School of Medicine Graduate Education Office ([som-geo@case.edu](mailto:som-geo@case.edu)) or the Office of Inclusion, Diversity and Equal Opportunity (OIDEO) ([oideo@case.edu](mailto:oideo@case.edu)).

More information about CWRU's policies and resources is available on [OIDEO's website](#).

### **Disability Accommodations**

In accordance with federal law, if you have a documented disability, you may be eligible to request accommodations from Disability Resources. In order to be considered for accommodations you must first register with the Disability Resources office. Please contact their office to register at 216-368-5230 or get [more information on how to begin the process](#). Please keep in mind that accommodations are not retroactive.

### **Mental Health Resources**

CWRU is committed to supporting and advancing the mental health and well-being of our students. During the course of your academic career, you may experience personal challenges that represent barriers in learning. While some stress is to be expected in the higher education experience, it can be compounded by unexpected setbacks or life changes outside the classroom. You should contact an instructor about any issue that could affect your education and contact support services on campus that have staff stand ready to assist you:

- [University Health and Counseling Services](#) (UHandCS)
  - Counseling Services and 24/7 on-call counselor 216/368-5872
  - [Health Services](#) and 24/7 Nurse on call 216/368-2450
- Dean of Students Office: 216/368-1527, <https://case.edu/studentlife/dean/>
- CWRU Police Dispatch
  - 216/368-3333 (emergency)
  - 216/368-3300 (non-emergency)

### **Academic Integrity**

Any violation of the University's Code of Ethics will not be tolerated. All forms of academic dishonesty including cheating, plagiarism, misrepresentation, and obstruction are violations of academic integrity standards and will result in a minimum penalty of receiving a zero for the assignment, the potential for failing the entire course. Cheating includes copying from another's work, falsifying problem solutions or laboratory reports, or using unauthorized sources, notes or computer programs. Plagiarism includes the presentation, without proper attribution, of another's words or ideas from printed or electronic sources. It is also plagiarism to submit, without the instructor's consent, an assignment in one class previously submitted in another. Misrepresentation includes forgery of official academic documents, the presentation of altered or falsified documents or testimony to a university office or official, taking an exam for another student, or lying about personal circumstances to postpone tests or assignments. Obstruction occurs when a student engages in unreasonable conduct that interferes with another's ability to conduct scholarly activity. Destroying a student's computer file, stealing a student's notebook, and stealing a book on reserve in the library are examples of obstruction.

In addition, the incident will be reported to the Senior Associate Dean of Graduate Studies. The CWRU Statement of Ethics for graduate students can be found [here](#).