CSAT 6100
ANATOMY PRACTICUM
SPRING 2020

CLASS DAYS and TIME: Wednesday—Prosection Discussion/Presentations, 10:00 AM-Noon; Day & time may be adjusted to accommodate dissection progress and/or faculty schedules.
Prosection Preparation—prosections are prepared by students during their available time during the week.

CLASSROOM: Gross Anatomy Lab, Dental School Building

COURSE FACULTY: Dr. Alan Sakaguchi, Director
Dr. Rekha Kar, Instructor
Dr. Haley Nation, Instructor

OFFICE LOCATION and HOURS: Dr. Alan Sakaguchi - 237D Medical School Building, hours by appointment
Dr. Rekha Kar - 1.275S Dental School Building, hours by appointment
Dr. Haley Nation - 236D Medical School Building, hours by appointment

EMAIL: Dr. Alan Sakaguchi—sakaguchi@uthscsa.edu
Dr. Rekha Kar—Karr@uthscsa.edu
Dr. Haley Nation—Nation@uthscsa.edu

TELEPHONE: Dr. Alan Sakaguchi-(210)567-3839
Dr. Rekha Kar-(210)567-1567
Dr. Haley Nation-(210)567-3878

READ THIS DOCUMENT CAREFULLY - YOU ARE RESPONSIBLE FOR ITS CONTENTS.

COURSE DESCRIPTION AND OBJECTIVES

CSAT 6100 is a foundational course that provides students in the Cell Systems & Anatomy (CSA) Master's Degree Program, Anatomical Sciences Track an opportunity to experience full cadaver dissection. Under the guidance of CSA anatomy faculty, students will develop their necessary and requisite dissection skills by preparing anatomical specimens during whole body dissection. Students will gain an appreciation of complex anatomical systems, revealed layer-by-layer through a systematic, step-by-step plan of hands-on-dissection. Students will gain teaching experience by presenting and explaining the anatomical aspects of the prosections that they complete to course faculty. This course will enhance competency in anatomy and prepare students for serving as teaching assistants in other medical, dental and health professions courses.

The overall goals of the CSAT 6100 Anatomy Practicum course are inspired by the Accreditation Council for Graduate Medical Education competencies. The goals will:

- Provide an experience that encourages and expects the respect for human dignity.
- Provide an experience that encourages and expects the development and practice of professionalism.

- Provide a venue to develop and strengthen skills in communication, interpersonal relations, conflict management and teamwork.
- Provide opportunities to augment anatomical knowledge through the preparation and study of the dissected human body and their applications to medicine and the health professions.
- Provide an experience for students to improve their anatomical knowledge and dissection skills.
- Provide an environment and an experience for students to develop, strengthen and practice effective presentation and teaching skills in human gross anatomy to peer students and anatomy faculty.

The broad learning objectives include:

- Describing the anatomy of the human body and the basic principles that govern the functions of its organ systems.
- Appling basic anatomical knowledge gained from the course to improve critical thinking, decision making, and problem solving skills.
- Using and evaluating anatomical study resources.
- Applying laboratory skills needed by students in their respective degree program and health professions careers.
- Using effective oral communication skills.

Specific learning objectives and learning outcomes:
By the end of the course the student should be able to do the following:

- List the general anatomical features of each organ system dissected, including the brain and spinal cord, cranial cavity, head & face, neck, thorax, abdomen, pelvis, gluteal region and extremities; List common anatomical variations observed in tissues and organ systems and their clinical significance.

  For specific organs and tissues located in these regions, be able to list the anatomical features, functions and anatomical relations including but not limited to the following—

  <u>Head & Neck</u>:
  - Be able to name each layer of the scalp and point out the danger space.
  - Name the bones of the skull and give examples of their bony features, name the major sutures; Point out the locations of the anterior and posterior fontanels and state when they normally close.
  - Describe the gross features of the brain, parts of the brainstem & general organization of the cranial cavity and each cranial fossa including grooves and foramina and structures passing through them.
  - Be able to name and point out the dural folds.
  - Name and give the functions and distribution of each cranial nerve and their associated ganglia; be able to state which cranial nerves carry preganglionic parasympathetic fibers and the names of their brain stem-associated nuclei.
  - List the fiber types and the locations of their cell bodies for each division of the trigeminal nerve.
  - Describe the structure, location and parts of the ventricular system and the paths that cerebrospinal fluid takes to reach the cisterna magna and subarachnoid space.
  - Name the major arteries supplying blood to the brain and be able to name the arteries that comprise the circulus arteriosus cerebri (Circle of Willis).
  - Be able to name each dural coverings of the brain and spinal cord and the parts of the dural venous sinus system; Point out the location of the cavernous sinus and list the structures that pass through it.
  - Describe the different types of cranial hematomas and which vessels are involved in their formation.

- Explain the function of the arachnoid granulations and return of cerebrospinal fluid to the venous system.
- Describe the blood supply, venous drainage and lymphatic drainage of the head & neck and the location of the danger area of the face.
- Be able to name each muscle of facial expression and muscle of mastication including their functions and motor innervations.
- Describe the structure of the temporomandibular joint.
- Describe the sensory innervation zones of the face and give the name of the principal branch of the trigeminal nerve innervating each zone.
- Describe how to test for facial nerve injury during a physical exam.
- Describe the innervation of the parotid gland starting with the location of nerve cell bodies in the brainstem and including all nerve branches and ganglion involved in the pathway.
- Be able to describe the maxillary artery and its major branches.
- Describe the gross structure of the orbit and the eye and including the chambers, refractive media, location of aqueous humor and its synthesis and drainage from the eye.
- List the motor innervation of the extraocular muscles and be able to explain the primary function and testing of each extraocular muscle.
- Explain the neurological basis for Horner's Syndrome and describe its clinical presentation.
- List the features of the nasal cavity including the conchae and meatuses.
- Give the names and locations of paranasal sinuses and their connections to the nasal cavity.
- Be able to describe the pathway and structures involved in the of drainage of lacrimal fluid from the eye to the nasal cavity.
- Describe the oral cavity and features of the tongue including its motor innervation and general and special sensory innervations; State how injury to the hypoglossal nerve would be tested; Be able to draw the autonomic nerve pathway for innervation of the salivary glands of the mouth, beginning with nerve cell bodies in the brainstem and including all branches and ganglia in the pathway.
- Explain the structure of the tympanic cavity including the tympanic membrane and auditory tube, the relations of each of its six walls, along with the auditory ossicles and muscles of the middle ear; Explain the function of the auditory tube and point out its location.
- Point out the palpable landmarks of the head & neck and where applicable their vertebral levels (e.g., pterion, vertex, hyoid bone, laryngeal prominence, jugular notch, etc.).
- List the muscles and motor & sensory innervation of the pharynx and specific features of each of its three subdivisions; Be able to point out the four gaps in the pharyngeal wall and list structures that pass through each gap.
- Be able to explain the afferent and efferent arms of the gag reflex.
- List the muscles of the soft palate, their functions and their motor innervation.
- Be able to describe and draw the locations of the danger spaces of the neck and explain their clinical significance.
- List the four major functions of the larynx including the Valsalva maneuver.
- List the cartilages and membranes of the larynx, including the vocal cords and conus elasticus, the muscles of the larynx along with their functions and motor innervation.
- Be able to point out the site for placement of an emergency airway (cricothyroidotomy).
- Describe the organization of tissue layers and viscera in the neck including the pharynx, esophagus, larynx and trachea; the structure, composition and function of the cervical plexus and brachial plexus; the organization, function and motor innervation of suprahyoid and infrahyoid muscles; the major

vessels and nerves in the neck including where they arise and the structures that they serve; Be able to list the branches of the external carotid artery.

- Be able to describe in the neck the locations and functions of cranial nerves V, VII, XI, X, XI and XII, the cervical plexus and brachial plexus, and sympathetic trunk.
- Describe the formation of the internal and external jugular veins and their major tributaries.
- Be able to draw the major triangles of the neck and to list the major contents of each.
- Describe the relations of the anterior scalene muscle at the root of the neck, including nerves, arteries and veins.

Thorax:

- Describe the organization and functions of the thoracic cage including the ribs, sternum, clavicle, thoracic spine and intercostal muscles; Be able to describe and point out examples of muscles representing the three different layers of the thoracic cage; Be able to describe the arrangement of neurovascular structures in an intercostal space and its clinical significance related to invasive procedures on the thorax.
- State the nerve fiber types and location of their cell bodies for an intercostal nerve.
- Describe the intercostal vessels and their origins.
- Be able to point out the location of the sternal angle and its anatomical and clinical significance.
- Describe the subdivisions of the mediastinum and the specific boundaries of each; List the specific features and structures contained within each subdivision.
- List the features of the lungs and pleural sacs including the lobes of the lungs, the named layers of the pleura and explain the concepts of pleural lines of reflection and pleural recesses including their names and locations and their clinical significance and the “rule of two.”
- Describe where the pleura extends beyond the thorax cage and thus is more vulnerable to injury.
- Be able to explain the causes and clinical sequelae of pleural effusion and pneumothorax; Explain the term thoracentesis and where this procedure may safely be performed on the thorax.
- Describe the differences in the structure of the main bronchi and their clinical significance with regard to aspiration of foreign bodies and where material is most likely to lodge.
- Describe the organization of structures at the hila of the lungs and specific differences in the right lung compared to the left lung.
- Be able to list the nerve fiber types and the location of their cell bodies in the pulmonary plexus and what functions they control or monitor in the lungs.
- Describe the course of the phrenic and vagus nerves through the thorax and the functions of each in the thorax.
- Explain the cardiac silhouette and the structures that make up its borders; Be able to draw its imaginary line on the intact thorax.
- Describe the structure of the pericardial sac including the names of its layers and the location of the pericardial cavity; Give its sensory innervations and blood supply.
- Explain the terms and clinical significance of pericardial effusion, cardiac tamponade and pericardiocentesis.
- Be able to describe the external and internal anatomy of the heart including the coronary arteries, cardiac veins, and specific features of each atrium and ventricle.
- Define the term “functional end artery” and its significance to the coronary arteries.
- Be able describe the location and function of each component of the cardiac conduction system; Be able to trace the pathway of an electrical impulse through all parts of the conduction system, including the septomarginal trabecula, beginning with the sinoatrial node and ending in the myocardium of the heart.

- For the pulmonary plexus, be able to describe its nerve fiber composition, the location of the nerve cell bodies and what functions the plexus controls or monitors in the heart; Explain the meaning of the terms cardioaccelerator and cardioinhibitory nerves.
- Explain the terms ischemia, angina and heart attack; Explain the basis for cardiac referred pain and the locations on the body wall at which it occurs.
- State the locations on the thorax where heard valve sounds and the sound of blood flow through them is best heard for the aortic, pulmonary, tricuspid and mitral valves.
- Describe the organization of the thoracic sympathetic trunk, its ganglia and communicating rami, formation and function of thoracic splanchnic nerves.
- Be able to describe the blood supply of the thoracic cage from internal thoracic arteries and the aorta.
- Describe the organization of the azygos venous system and pattern of drainage of venous blood of the thorax.
- List the intrinsic muscles of the back, their functions and motor innervation; List the extrinsic muscles of the thorax and back, their functions and motor innervations.
- Describe the lymphatic drainage of all skin between the umbilicus and clavicle to the axillary lymph nodes and be able to name each its five sets of nodes and the structures drained by them; Describe the pattern of lymphatic drainage of the breast by axillary lymph nodes and its clinical significance with regard to breast cancer.
- Describe the gross anatomy of the female breast; Explain the terms peau d'orange, retraction of the nipple and dimpling of skin and their clinical significance to cancer of the female breast.

<u>Abdominal wall, abdominopelvic cavity and viscera</u>:

- Be able to point out the major surface anatomical landmarks of the abdominal wall and trunk region including the xiphoid process, costal margin, umbilicus, linea alba, linea semilunaris, tendinous intersections, iliac crest, anterior superior iliac spine and pubic tubercle; Point out the inguinal ligament and its bony attachments.
- Explain the layered anatomy of the anterolateral abdominal wall and be able to indicate each layer of fascia and muscle; Indicate the features of the rectus abdominis muscle and explain the composition of its anterior and posterior laminae above and below the arcuate line.
- Be able to point out the locations of the deep and superficial inguinal rings and name the structures that form them; Describe the inguinal canal and list structures passing through it in the male and female; Define the inguinal ligament and state and point out its bony attachments.
- Describe the contents of the spermatic cord including the vas deferens, testicular artery, and pampiniform plexus of veins; Explain what structures contribute to each layer of spermatic fascia.
- Identify the testes, the epididymis, the parietal and visceral layers of the tunica vaginalis and the tunica albuginea
- Be able to point out the peritoneal folds on the inner abdominal walls, the structures that form them as well as the fossae on the inner aspect of the abdominal wall.
- Explain the locations, types and frequencies of inguinal hernias in males and females and where they pass through the abdominal wall relative to the inferior epigastric vessels.
- Describe the organization of the peritoneal cavity into a greater sac and a lesser sac and their sole communication via the omental foramen.
- Point out the thoracoabdominal diaphragm along with its central tendon, its crura and opening and where structures pass through (e.g., thoracic duct, inferior vena cava, esophagus, aorta, vagal trunks, sympathetic trunks).
- Be able to explain the basis for referred pain from parts of the diaphragm to the shoulder.

- Explain the function of mesenteries and describe the major mesenteries of the abdominal cavity including the greater and lesser omenta and its two parts—hepatogastric and hepatoduodenal ligaments, the falciform ligament, gastrosplenic ligament and lienorenal ligament, and the mesentery proper.
- Explain the concepts of “peritoneal” versus “retroperitoneal” or “secondarily retroperitoneal” organs and give examples of each.
- List the contents of the hepatoduodenal ligament and be able to state the relative position of each structure within the ligament.
- Describe the organization of the gastrointestinal system into foregut, midgut and hindgut structures based upon blood supply by branches of the celiac trunk, superior mesenteric artery and inferior mesenteric artery; Be able to give examples of specific organs that fall into these three subdivisions.
- Give the nerve supply and lymphatic drainage of foregut, hindgut and midgut.
- List the anatomical features of the stomach, liver, pancreas, spleen, and kidneys; Describe the detailed internal anatomy of the stomach and kidney, and for the latter the layers of fat and fascia surrounding the kidney, the collecting system including minor and major calyces, renal pelvis and ureter.
- Be able to describe sliding and paraesophageal hiatal hernias.
- Explain the clinical significance of the tail of the pancreas resting in the lienorenal ligament with regard to splenectomy.
- Describe the blood supply to the liver including branches of the hepatic artery and portal vein; Describe the location and function of the gall bladder and formation of the biliary system including cystic duct, hepatic ducts, common hepatic duct and bile duct; Be able to point out the major duodenal papilla in the descending duodenum and the formation of the hepatopancreatic ampulla by the bile duct and main pancreatic duct.
- Describe the features on the visceral surface of the liver including the fissure for the ligamentum venosum and fissure for the ligamentum teres, fossa for the gall bladder, and groove for the inferior vena cave; Be able to point out the lobes of the liver (right, left, caudate, quadrate).
- Be able to list the different parts of the large and small intestines and give examples of features characterizing each part.
- Name the four parts of the duodenum and their anatomical relations (e.g., to the kidney, hepatoduodenal ligament, inferior vena cava, aorta, transverse mesocolon and mesentery proper, pancreas and superior mesenteric vessels.
- Name the branches of the celiac trunk to foregut structures, and branches of the superior and inferior mesenteric artery to parts of the midgut and hindgut, respectively; Describe the formation of the marginal artery and its clinical significance.
- Be able to give the blood supply and venous drainage of the suprarenal glands and the kidneys.
- Explain the general organization of innervation to the foregut, midgut and hindgut and the origin of nerves and nerve fibers supplying these regions; Point out the location of the aortic plexus and superior mesenteric plexus and their associated nerve fiber types and location of cell bodies; give examples of lumbar splanchnic nerves and communicating rami and list the nerve fiber types they carry; Point out the lumbar plexus and major branches including the femoral and obturator nerves.
- Describe the major genitourinary structures in the male and female; Describe the features of the penis including the crura, erectile tissues and muscles covering them and parts of the male urethra.
- Describe the erectile tissues of the female and muscles covering the crura of the clitoris; Be able to explain differences in the anatomical organization of certain genitorurinary structures in the male versus the female (e.g., urethra, erectile tissues, location of lubricating glands).

- Name each layer of the perineum and the location, boundaries and spaces of the urogenital triangle and anal triangle including a detailed description of the layers and spaces associated with the urogenital diaphragm.
- Describe the general pattern of innervation and blood supply of the perineum.

Extremities and gluteal region:

Upper Limb, Axilla and Brachial Plexus—

- Describe the bony components of the appendicular skeletons including the pectoral girdle and pelvic girdle, their major joints and ligaments, and their attachment to the axial skeleton.
- Be able to demonstrate the movements extension, flexion, medial rotation, lateral rotation, abduction, adduction, pronation, supination, opposition and reposition and state that joints at which each of the movements can take place.
- Describe the movements that take place at each major joint of the upper limb and the muscles responsible for each movement.
- Be able to describe each region of the upper limb and its organization into compartments; list the bone(s), muscles, joints, ligaments, nerves and vessels associated with each compartment of the upper limb.
- Explain the structure of the shoulder joint and the muscles comprising the rotator cuff.
- Define the terms shoulder separation and shoulder dislocation.
- Describe the location of the axilla, the structures that make up its walls and structures contained with it or that pass through it.
- Be able to draw a detailed and complete diagram of the brachial plexus, including its rami, trunks, divisions, cords and terminal branches; Be able to list the spinal nerve levels that comprise the brachial plexus, all of its branches (terminal and non-terminal) and the structures they innervate.
- Explain which parts of the brachial plexus are affected in Erb's palsy and "waiter's tip" position, "Saturday Night Palsy," Klumpke's palsy and clawhand, carpal tunnel syndrome and "ape hand."
- List the boundaries of the cubital fossa and the arrangement of major structures located in the fossa including nerves, tendons and arteries.
- Describe the blood supply and venous drainage of the upper limb.
- Define the term thoracic outlet syndrome and give examples of structures that may be affected by this condition.
- Describe the lymphatic drainage of the upper limb including the organization and pattern of drainage of the axillary lymph nodes (also a learning objective for the Thorax).
- Be able to explain the scapular anastomosis and its function and describe at least route that blood could take though it to reach the upper limb in case of blockage of its main arterial blood supply.

Gluteal Region—

- Be able to list the bones comprising the pelvis and each of their major bony landmarks (e.g., anterior superior and inferior iliac spines, iliac crest, acetabulum, greater and lesser sciatic notches, ischial spine, ischial tuberosity).
- Define the term os coxa and state the bones that comprise it.
- Name the three gluteus muscles and give their motor innervation, blood supplies, origins and insertions and primary actions.
- Name the six short lateral rotator muscles, their motor innervation, origins and insertions and primary actions.

- List the structures that pass into the gluteal region through the greater sciatic foramen and state how they are positioned relative to the piriformis muscle.
- Name the structures that leave the gluteal region through the lesser sciatic foramen.
- State the deficits associated with gluteal nerve injuries.
- Be able to explain the basis for a positive Trendelenburg sign.
- Describe the "safe area" for intramuscular injections into the gluteal region

Lower limb and lumbosacral plexus—

- Be able to list the bones comprising the lower limb and major palpable bony features.
- State the boundaries of the femoral triangle; List the structures located with this triangle and give the order (lateral to medial) in which they occur.
- Describe the general structure of the lumbosacral plexus, it major branches, and the peripheral branches serving individual structures of the lower limb.
- Be able to demonstrate the movements adduction, abduction, flexion, extension, medial rotation, lateral rotation, dorsiflexion, plantarflexion, inversion and eversion and state the joints of the lower limb at which these movements can take place.
- Summarize the organization of the lower limb into anatomical regions and subdivide each region into specific muscle compartments; Name the muscles in each compartment, their origins and insertions, motor innervation and major actions.
- Describe the major blood supplies to the lower limb; Discuss the femoral artery and its major branches and be able to state the compartments that each major branch serves; be able to list the arteries that comprise the cruciate anastomosis.
- Explain the concept of "end arteries" and its significance with respect to the gastrocnemius muscle.
- List the boundaries of the popliteal fossa and the structures that reside in it or pass through it.
- Discuss the lymphatic drainage of the lower limb to the superficial and deep inguinal lymph nodes.
- Describe the structure of the hip, knee, ankle, subtalar and transverse tarsal joints including their bony, ligamentous and soft tissue components; List which bones and joints of the lower limb play a role in weight bearing.
- List the major ligaments that support the hip, knee and ankle joints and state which movements they are designed to limit.
- Describe injuries to the cruciate ligaments, how they are tested and be able to explain a positive anterior or posterior drawer sign.
- Be able to explain why the ankle joint is least stable in plantarflexion and more prone to injury in this position.
- Point out the location of the calcaneonavicular "spring" ligament and explain why it is considered the most important ligament of the foot.

<u>Back, suboccipital region, vertebral column and spinal cord</u>—

- Be able to list the intrinsic and extrinsic muscles of the back, their general origins and insertions, actions and motor innervation; State which of these muscles receive motor innervation from dorsal versus ventral primary rami.
- Point out the semispinalis capitis, splenius capitus and trapezius muscles and give their motor innervation.
- State the number of bone comprising each section of the vertebral column; Describe typical features of a vertebra as well as features which are unique to specific bones of a given region (e.g., cervical versus thoracic); Be able to assign a vertebra to its respective region.

- List the major ligaments that connect adjacent vertebra (supraspinous, interspinous, and yellow [ligamenta flava]).
- List the components of an intervertebral disc; Explain how a ruptured intervertebral disc might impinge on a spinal nerve.
- Define the terms kyphosis, lordosis and scoliosis; State the primary and secondary curvatures of the back.
- State and be able to point out the potential and real spaces around and within the dural sac, the relations of each space to the meningeal coverings of the spinal cord, and the contents of each space.
- Be able to demonstrate the features of the spinal cord including dorsal and ventral rootlets, dorsal root ganglion, conus medullaris, cauda equina, filum terminale, and denticulate ligament.
- List the nerve fiber types and the location of cell bodies in dorsal and ventral roots of a spinal nerve, in dorsal and ventral primary rami, and in gray and white communicating rami.
- Be able to describe and point out the location of the sympathetic trunk, examples of its paravertebral ganglia, and communicating rami.
- Give the vertebral levels of the caudal end of the spinal cord (tip of the conus medullaris) in newborns and in adults; Give the vertebral level of the caudal end of the dural sac and subarachnoid space; Give the vertebral levels where a needle may be safely placed to sample cerebrospinal fluid from the lumbar cistern.

Pre-requisites – Students must be concurrently enrolled in CSAT 5022 Interprofessional Human Gross Anatomy and must be officially enrolled in the Master's Degree Program, Anatomical Sciences Track, Cell Systems & Anatomy

Semester credit hours – 1.5 credit hours.

Lab prosection preparation hours = 1 session x 5 hours

10 sessions x 4.5 hours = 45 hours

Total =50 hours

Lab prosection presentation hours = 11 presentation sessions x 2 hours = 22 hours

Total lab hours = 22 + 50 =72 hours

Total course credit hours = 1.5

Lab prosection presentations are typically scheduled Wednesday mornings but may be rescheduled to an alternative day or time if necessary. Course faculty will meet with students briefly to provide instructions and guidance before they begin the dissections and will also periodically check the progress of each dissection. These meetings will be arranged according to faculty schedules.

COURSE ORGANIZATION

The main teaching modalities used in this course include:

1) Whole body dissection – Students will gain experience and will develop skills in identifying and correctly displaying anatomical structures during hands-on whole body dissection. Students will gain knowledge of the overall anatomical relations of structures and how they function together in their respective organ systems. Students will also appreciate and learn how diverse organ systems of the human body interact and function with each other. Students will also benefit by practicing effective communication and teamwork, time management and work efficiency, and by the feeling of pride and accomplishment from performing a well-executed dissection.

2) Mentored supervision – Course faculty will provide guided supervision and instruction to students during the preparation of prosections. Students will learn proper and safe handling of dissection tools, best practices in planning and undertaking dissection of human cadavers, and optimum ways to display anatomical structures and their relations to surrounding structures and organs. Students may have access to dissection videos that show preparation of prosections similar (but not necessarily identical) to those that they will prepare. Each student is expected to develop the ability to carry out a plan for dissection of anatomical structures during whole body dissection, including being able to identify, to correctly dissect and to appropriately display each major anatomical structure on cadaver material. Students must be able to explain the dissection plan clearly to course faculty prior to beginning each dissection. Students will also be expected to develop and display a mastery of the correct spelling, anatomical features and general functions of the dissected structures. Each student should be fully engaged in the dissections and contribute their fair share of the work. While course faculty can help students plan their work, they cannot perform the prosections for students.

The dissection plans and structures to be displayed will generally be taken from *Grant's Dissector, 16th ed.* Course faculty will monitor and determine the adequacy of each dissection by assessing the following—

- Whether each required structure has been uncovered.
- Whether each structure is intact or damaged.
- Whether each structure has been sufficiently cleaned that it can be recognized and readily identified based upon the portions uncovered.
- Whether each structure is correctly displayed in relation to surrounding structures and organs.

Course faculty must give their approval of the quality of each dissection before allowing students to proceed.

Note: Students in CSAT 6100 will dissect areas of the body that are not dissected in CSAT 5022 but are taught by prosection in the latter course. For the back, gluteal region and extremities, students in CSAT 6100 will present and discuss these structures on the cadavers that they dissect in the CSAT 5022 course.

3) Prosection presentations – Course faculty will assist each student in their preparations of prosection presentations which are given during the scheduled weekly Wednesday morning meetings. The presentations will consist of:

- a brief general introduction and overview of the area or organ system dissected.
- a step-by-step description and explanation of the structures displayed.
- where possible, how structures relate anatomically to those uncovered and studied during previous prosections.

The student will be encouraged to use bones, plastinated specimens and anatomical models to enhance their presentations. Each student will be expected to demonstrate the ability to clearly describe and explain anatomical structures studied during each dissection and each prosection presentation. Course faculty will assess the student's ability to use correct anatomical terminology, to correctly pronounce anatomical terms, and to correctly describe anatomical features of structures and organs for each dissection.

While a given student may be assigned to prepare selected portions of a prosection or to separate organ systems, each student is expected to learn and be knowledgeable about all structures covered during the presentation sessions. Course faculty will encourage discussion during the presentations which are intended to be highly interactive. Course faculty will frequently pose questions to the student presenters to help them develop poise and to allow them to gain experience in answering similar questions that may arise while serving as teaching assistants in future anatomy courses. The sessions will provide an opportunity for students to practice correct usage of anatomical terminology, proper display and explanation of anatomical structures, and to hone their presentation skills in front of a group of peers, faculty and guests.

Materials – All dissection tools and disposable lab materials required to complete the prosections will be provided. Students must provide their own scrubs.

Computer Access – A computer capable of connecting to the internet is required for accessing course related material and for email access.

Reading Assignments – Dissections will generally follow the instructions in *Grant's Dissector, 16th ed.* Students may be asked to modify specific dissections, and in those instances, revised instructions will be provided by the course faculty. Readings to supplement laboratory dissections (e.g., from relevant chapters of Moore, Dalley, and Agur, *Clinically Oriented Anatomy, 8th ed.*) are highly recommended but optional.

ATTENDANCE

Students are required to attend and participate fully in each session listed on the course schedule. Any absence must have prior approval of the course director and any missed assignments or work must be made up in a timely manner to receive credit for the course.

TEXTBOOKS

Required: *Grant's Dissector, 16th edition, 2017,* Alan J. Denton, Wolters Kluwer

Netter Atlas of Anatomy (*5th or 6th edition*), Elsevier

If available, a copy of the anatomy atlas may be provided to students, on loan, for use during the course. Loaner copies must not be removed from the lab and they must be returned at the end of the course in their original condition. If a loaner copy is damaged or lost, it must be replaced with a clean undamaged copy before a student's final grade will be reported to the Registrar.

It is entirely at the discretion of the student to purchase a copy of the Netter Atlas for personal use outside of the anatomy lab.

Recommended: *Clinically Oriented Anatomy, 8th edition*, 2018, Moore, Dalley and Agur, Wolters Kluwer

GRADING POLICIES AND EXAMINATION PROCEDURES

Performance of students enrolled in CSAT 6100 will be assessed by the following:

1. **Attendance and participation in all required course activities as follows**:
   a. Course orientation – An orientation introducing the course will explain the objectives, how prosections will be prepared and presented, grading policy, learning outcomes and expectations by course faculty.
   b. Prosection preparation - Students will prepare prosections by hands-on dissection of the human body under course faculty guidance and supervision using *Grant's Dissector* as a general guide. The adequacy, accuracy, and thoroughness of each prosection will be assessed by course faculty. Any deficiencies will be immediately conveyed to students for timely revision. The schedule of prosection presentations is given in the *Tentative Class Schedule.* Course faculty will meet with students to provide guided supervision for the prosections during prearranged meeting times.
   c. Prosection presentations – Students will be required to display and explain their prosections to peers enrolled in the course, to course faculty and guests during the weekly, 2-hour prosection meeting (see *Tentative Class Schedule*).
2. **Demonstration of anatomy competency** – Students will demonstrate competency through the correct and accurate use of anatomical terminology and in general anatomical knowledge in both oral and written communications. Anatomy competency will be assessed during student-faculty interactions during the guided-supervised prosections and during group prosection presentations to course faculty, course peers, and guests. Any student judged by course faculty to have inadequately demonstrated anatomy competency in a particular

organ system(s) may be asked to remediate by a second prosection presentation of relevant structures. If a student does not successfully remediate, a grade of incomplete (I) may be reported to the Registrar.

3. **Course experience feedback questionnaire** - At the end of the course students will complete an anonymous questionnaire about their experiences during the course. The questionnaire is designed to identify elements of the course that can be augmented and/or improved to increase the educational and professional benefit to the student.

Grading System

S = Satisfactory – All course requirements adequately met and completed.
U = Unsatisfactory – One or more course requirements not adequately met and not corrected or remediated.
I = Incomplete – One or more course requirements pending completion.

LABORATORY CONDUCT, PRECAUTIONS AND REGULATIONS

Laboratory Precautions - Agents such as phenol and formaldehyde are extremely important for both the preservation of cadaver material and to ensure that disease is not transmitted to the living. All students are required to wear gloves when handling cadaver material. Tank tops, shorts and open shoes are not permitted. A clean protective apron or coat is recommended when working in the laboratory. Laboratory air has been analyzed for levels of chemicals in question and concentrations have been found to fall within safe levels as established by the Occupational Safety and Health Administration. Concentrations of phenol and formaldehyde will continue to be monitored on a regular basis. As an additional safety precaution, any female student who is pregnant or suspects she is pregnant should **immediately** bring this information to the attention of the Course Director.

Please note that these chemicals are used only at low concentrations in the gross anatomy laboratory and they are necessary to protect the health of the living. Every indication is that at the concentrations used these chemicals should not pose a threat to students or faculty. However, the issue will continue to be monitored and in the interim, intelligent caution is strongly encouraged. (Reference: Blair, et al. 1986 *J Natl Cancer Inst* **76**: 1071-1084; Pabst 1987 *Anat Rec* **219**: 109-112).

Laboratory Rules – At the beginning of the course each student must declare that they have read and understood the following rules that govern the use of the anatomy laboratory before being allowed to continue. All activities pursued by students in the Gross Anatomy Laboratory including the use of human material for academic study are strictly governed by Department, University, and State of Texas regulations and laws. Any violation of these rules may result in disciplinary action that can include dismissal from a student's respective program as well as fine, incarceration, or both.

1. **OBSERVE LABORATORY SCHEDULE**

   The laboratories will be unlocked and available for your use 24 hours a day, Monday through Sunday EXCEPT when other scheduled classes are in session. Certain exceptions may be made to this policy preceding major examinations and will be announced in class. *The main door at the entrance of the anatomy laboratories and doors of all the laboratories MUST remain closed AT ALL TIMES other than normal ingress and egress and you should take special precaution that the door is open for the shortest possible time when entering or leaving the laboratory.* **There are no exceptions to this rule.**

2. **KEEP THE LABORATORY CLEAN**

   You are expected to maintain your personal appearance and assigned working space in accordance with professional standards of cleanliness.

   Personal attire

   Although there is no specific code of personal dress for laboratory work, what you wear **MUST** be kept clean so as not to create a health hazard for yourself and those with whom you live and work. Shorts and open shoes are **NOT** allowed.

Laboratory cleanliness

Place paper waste (such as towels) in the biohazard boxes located near the sinks. Discard sharp objects such as scalpel blades, needles, etc., in the Sharps containers on the counters; *please do **NOT** put sharp objects in the containers for biohazardous paper trash or in the red tissue barrels.* During dissections, parts of the body (such as skin, scraps of fat, etc.) may be placed in the small plastic or stainless steel buckets beneath the dissection tanks; *at the end of each dissection period, these are to be emptied into the large plastic containers marked for "Tissue Only."* **DO NOT dispose of paper towels or scraps of tissue in dissection tanks or in sinks**. Be sure to leave the cadaver properly draped to avoid excessive drying.

3. **USE DEMONSTRATION MATERIALS WITH CARE**

   Skeletons are never to be disarticulated or removed from stands. The disarticulated skeletal materials issued by Anatomical Services personnel are fragile and irreplaceable. Under no circumstances are reference books, specimens, etc., to be removed from the laboratories. Models and other demonstration materials must be handled with care. **DO NOT** leave models disassembled. Special instruments (bone forceps, saws, etc.) are to be returned to their respective cabinet at the end of each laboratory period.

4. **TAKE CARE OF THE LIGHTS**

   Dissection lights must be manipulated carefully; be sure your light is turned off before you leave the laboratories. Turning the concavity of the lamp reflector upward and raising the lamp head will help extend the life of the bulb and will help protect the lamp from accidental damage. If you are the last one to leave the lab at the end of a laboratory period or at night, please help conserve energy by turning off the room lights.

5. **DO NOT SMOKE, EAT, OR DRINK IN THE LABORATORY**

   Smoking, eating, or drinking are prohibited in the laboratories, since, in this environment, these activities may pose a hazard to your health.

6. **WORK QUIETLY IN THE LAB**

   Loud talk, horseplay, etc., are completely out of place in the laboratories.

7. **DO NOT BRING VISITORS INTO THE LABORATORY**

   No visitors will be allowed into the laboratory under any circumstance.

8. **DO NOT BRING CAMERAS, ETC. INTO THE LABORATORY**

   Photographic equipment is NOT permitted in the laboratories at any time.

9. **KEEP SPECIMENS INSIDE THE LAB**

   Parts of the body, pieces of human tissue, or prosthetic appliances found in cadavers are never to be removed from the labs. Violation of this rule or of rule #10 is a Class A Misdemeanor under Texas law, punishable by fine, jail sentence, or both.

10. **RESPECT THE CADAVERS AS HUMAN REMAINS**

    Proper care of and respect for the bodies is absolutely essential.

REQUESTS FOR ACCOMODATIONS FOR DISABILITIES

In accordance with policy 4.2.3, **Request for Accommodation Under the ADA and the ADA Amendments Act of 2008 (ADAAA)**, any student requesting accommodation must submit the appropriate request for accommodation under the American with Disabilities Act (ADA, form 100). to his/her appropriate Associate Dean of their School and a copy to the ADA Coordinator. Additional information may be obtained at http://uthscsa.edu/eeo/request.asp. The completed form should be submitted to Dr. Nicquet Blake, Associate Dean Graduate School of Biomedical Sciences (Room 102, Academic Administration Building, Long Campus) (*for students in the Graduate School Programs*). A copy should also be submitted contemporaneously to Dr. Bonnie Blankmeyer, Academic faculty and student ombudsperson and ADA compliance officer (Room 3.452T, Dental School Building). The process of requesting

accommodations should be initiated by the student as soon as possible and once approved, the course directors should be notified immediately so that appropriate arrangements can be made.

ACADEMIC INTEGRITY AND PROFESSIONALISM

Any student who commits an act of academic dishonesty is subject to discipline as prescribed by the UT System Rules and Regulations of the Board of Regents. Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an exam for another person, signing attendance sheets for another student, and any act designed to give unfair advantage to a student or the attempt to commit such an act. Additional information may be obtained at http://catalog.uthscsa.edu/generalinformation/generalacademicpolicies/academicdishonestypolicy/

TITLE IX AT UTHSCSA

Title IX Defined:

Title of the Education Amendments of 1972 is a federal law that prohibits sex discrimination in education. It reads "no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance."

UT Health San Antonio's Commitment:

UT Health San Antonio (UTHSA) is committed to maintaining a learning environment that is free from discriminatory conduct based on gender. As required by Title IX, UTHSA does not discriminate on the basis of sex in its education programs and activities, and it encourages any student, faculty, or staff member who thinks that he or she has been subjected to sex discrimination, sexual harassment (including sexual violence) or sexual misconduct to immediately report the incident to the Title IX Director.

In an emergency, victims of sexual abuse should call 911. For non-emergencies, they may contact UPD at 210-567-2800. Additional information may be obtained at http://students.uthscsa.edu/titleix/

EMAIL POLICY

Each student at the time of enrollment is issued a University LiveMail email address and account. This account is used for official communications of University business between faculty and students. Students in CSAT 6100 are expected to check their LiveMail email Inboxes on a regular basis for any course related communication that may include instructions, announcements or other related material. Having a LiveMail account suspended because it has exceeded its capacity or for any other reason is not an excuse for a student to miss course related communications from CSAT 6100 faculty.

USE OF RECORDING DEVICES

No audio recording devices may be used in the Gross Anatomy Laboratory without prior permission of the Director of Anatomical Services, Dr. Omid Rahimi, rahimi@uthscsa.edu , and the Director of CSAT 6100.

ELECTRONIC DEVICES

No devices, including cameras, cell phones, tablets, or any other electronic apparatus may be used to record photographic images in the Gross Anatomy Laboratory without prior permission of the Director of Anatomical Services, Dr. Omid Rahimi and the Director of CSAT 6100.

TENTATIVE CLASS SCHEDULE
CSAT 6100
ANATOMY PRACTICUM
SPRING 2020

WEEK	DATE	REGIONAL ANATOMY (Refer to the sections in Grant's Dissector listed below)	Dissection or Prosection Discussion/Presentation*†	Instructor and Modality
Week 1	Feb 10-14	Wed Feb 12: Course Orientation **Review Ch. 7 Head and Neck pp. 269-312.**	No prosection presentation this week. Course orientation on Feb. 12 (TBA) After Feb. 14, begin dissections of **Scalp, Skull, Cranial Cavity, Meninges, Brain, Cranial nerves**.	Course Faculty
Week 2	Feb 17-21	**Review Ch. 7 Head and Neck** After CSAT 5022 exam on Feb 21, **begin Neck, Face & Infratemporal Region dissections; Begin dissection orbit & ear, pharynx, larynx & soft palate .**	Feb 19 (Wed): **Prosection discussion/ presentation —Skull, Scalp, Cranial Cavity & Meninges, Brain, Cranial nerves.**	Course Faculty Prosection presentations
Week 3	Feb 24-28	**Review –Ch. 3 Thorax pp. 73-98** **Ch. 4 Abdomen pp. 99-140** **Begin dissections**	Feb 26 (Wed): **Prosection discussion/ presentation—Neck, face, infratemporal, orbit, ear, pharynx, larynx, soft palate**	Course Faculty Prosection presentations
Week 4	Mar 2-6	**Review—Ch. 5 Pelvis and Perineum pp. 141-182** **Begin/continue previous dissections.**	Mar 4 (Wed): **Prosection discussion/ Presentation— Anterior Chest Wall, & Thoracic Contents, Lungs; Mediastinum & Heart**	Course Faculty Prosection presentations
Week 5**	Mar 9-13	**CSAT 6100 IS IN SESSION.** **Review—Ch. 5 Pelvis and Perineum pp. 141-182** **Begin/continue previous dissections.**	Mar 11 (Wed)**: Prosection discussion/ presentation— Abdominopelvic Cavity; Anterior Abdominal Wall & Abdominal Contents; Posterior Abdominal Wall & Diaphragm, Pelvic Organs**	Course Faculty Prosection presentations
Week 6	Mar 16-20	**Review—Ch.1 The Back pp 5-22** **Ch.2 The Upper Limb-- pp 23-34** **Begin dissections in CSAT 5022.** **Note:** *The **Back**$^{\Phi}$ and all subsequent dissections are performed on the cadavers used for CSAT 5022 and all corresponding prosection presentations are done on these cadavers.*	Mar 18 (Wed): **Prosection discussion/ presentation— Abdominopelvic Cavity; Anterior Abdominal Wall & Abdominal Contents; Posterior Abdominal Wall & Diaphragm, Pelvic Organs** **Back** (if not completed during previous session) Otherwise present **Back**.	Course Faculty Prosection presentations

Week 7	Mar 23-27	**Ch.2 The Upper Limb—Axilla, Arm, Cubital Fossa pp. 35-44** **Ch.2 The Upper Limb—Forearm, Hand pp. 44-65**	Mar 25 (Wed): **Prosection discussion/ presentation —Back** (if not presented previously), **Axilla, Shoulder, Arm**	Course Faculty Prosection presentations
Week 8	Mar 30-Apr 3		Apr 1 (Wed)**: Prosection discussion/ presentation—Forearm, Wrist and Hand**	Course Faculty Prosection presentations
Week 9	Apr 6-10	**Ch. 6 The Lower Limb—pp 183-221**	Apr 8 (Wed)**: No Prosection discussion/ presentation**	Course Faculty
Week 10	Apr 13-17	**Ch. 6 The Lower Limb—pp 183-221**	April 15 (Wed): **Prosection discussion/ presentation—Gluteal, Posterior Thigh, Popliteal Fossa; Pelvis, Hip, Anterior & Medial Thigh**	Course Faculty Prosection presentations
Week 11	Apr 20-24	**Ch. 6 The Lower Limb—Leg pp 205-216**	Apr 22 (Wed)**: Prosection discussion/ presentation— Knee & Anterior, Lateral & Posterior Compartment of the Leg**	Course Faculty Prosection presentations
Week 12	Apr 27-May 1	**Review—Ch. 6 The Lower Limb—Foot pp 216-221**	Apr 29 (Wed): **Prosection discussion/ presentation— Ankle, Foot**	Course Faculty Prosection presentations

*Each lab prosection discussion/presentation session is 2 hours (Wednesdays, 10:00-noon in the anatomy lab, unless otherwise noted). Lab prosection preparation time is 4.5 hours except for the prosection for Week 6 which is 5 hours. Each prosection is completed prior to the following presentation session.

Spring break week, Mar 9-13; **CSAT 6100 will be in session during spring break.

ϕ Back, upper and lower extremity dissections and prosection demonstrations will be done on the cadavers used for CSAT 5022. Additional cleaning of structures may be required to adequately prepare them for discussion/demonstration during CSAT 6100 prosection presentations.

†Dissections from *Grant's Dissector, 16th ed., 2017, Denton, Alan, J., Wolters Kluwer.*
Students may be assigned to dissect selected structures during preparation of prosections. Regardless of who is assigned to present the prosection, each student is responsible for assisting on all dissections and for learning all structures displayed during the weekly dissections. Dissections should be completed on both sides of the cadavers, unless instructed otherwise. In order to complete dissections more efficiently students should plan their work prior to beginning and are recommended to work cooperatively. Each student should contribute their fair share of the work.