Human Body
Course Goals

Goals

1. Demonstrate knowledge of the gross anatomical structure and basic functions of the musculoskeletal system.
2. Demonstrate knowledge of the gross anatomical structure and basic functions of the peripheral nervous system.
3. Demonstrate knowledge of the gross anatomical structure and basic functions of the blood and lymphatic vascular systems.
4. Demonstrate knowledge of the gross anatomical structure and basic functions of the respiratory system.
5. Demonstrate knowledge of the gross anatomical structure and basic functions of the digestive system.
6. Demonstrate knowledge of the gross anatomical structure and basic functions of the female and male urogenital systems.
7. Demonstrate knowledge of the basic anatomical development of the extremities, back, body cavities and viscera, and head and neck.
8. Demonstrate knowledge of clinical reasoning as it applies to anatomy content and its application in physical exam and imaging.
9. Demonstrate familiarity with the course resources, procedures, and expectations of the students.
Anatomy Imaging Sessions - Extremities & Back

1. On radiological images, identify the structures listed under "Radiology" in the Cadaver Dissection Guide: Chapter 2 (Back); Chapter 3 (Lower Extremities); and Chapter 4 (Upper Extremities).

2. Discuss the factors that affect the appearance of radiographs (xrays).

3. Describe standard image projections (AP, PA, lateral, axillary, oblique, external rotation, internal rotation) used in the back and extremities.

4. Describe imaging planes and orientation on radiographs, CT, and MRI.

5. Identify the patient's right/left and describe the various terms of relationship and comparison (anterior [ventral, palmar]/posterior [dorsal]; medial/lateral; superior [cranial]/inferior [caudal]; proximal/distal; superficial/deep) on imaging studies.

6. Describe the structure of long bones (diaphysis, metaphysis, epiphysis) and identify them on imaging studies.

7. Identify and describe the significance of normal soft tissue-fat interface and fat pads.

8. Identify and describe appendicular fractures and dislocations:
   a) Clavicle
   b) Glenohumeral
   c) Malleolar
   d) Radial head
   e) Scaphoid
   f) Colles
   g) Hip
   h) Femoral neck
Anatomy Imaging Sessions - Head & Neck

1. On radiological images, identify the structures listed under "Radiology" in the Cadaver Dissection Guide: Chapter 6 (Head and Neck).
2. Discuss how MRI, fluoroscopy and angiography images are obtained.
3. Discuss the factors that affect the appearance of MRI, fluoroscopy, and angiography.
4. Identify on cervical spine and neck x-ray:
   a. Anterior spinal line
   b. Posterior spinal line
   c. Spinolaminar line
   d. Prevertebral fat stripe
   e. Fractures
5. Describe and identify:
   a. Subdural hematoma
   b. Epidural hematoma
   c. Subarachnoid hemorrhage
   d. Intraparenchymal hemorrhage

Anatomy Imaging Sessions - Trunk

1. On radiological images, identify the structures listed under "Radiology" in the Cadaver Dissection Guide: Chapter 5 (Trunk).
2. Discuss how CT and ultrasound (US) images are obtained.
3. Discuss the factors that affect the appearance of CT and US images.
4. Distinguish between anterior and posterior ribs, and identify on a chest x-ray:
   a. Major and minor fissures
   b. Pleural line
   c. Lobes of the lung
   d. Trachea, carina, right and left main bronchii
   e. Costophrenic angles
5. Distinguish between supine and upright abdominal x-rays and identify the following:
   a. Liver
   b. Kidney
   c. Spleen
   d. Stomach
   e. Duodenum
   f. Large intestine and its named parts
   g. Small intestine

Anatomy Lesson I - Cadaver as First Teacher Lecture

1. Identify the values involved in approaching the cadaver as one of your "first teachers" in medical school.
2. Describe the role of culture in attitudes towards death and the use of cadavers.
3. Describe experiences with human dissection in the form of a narrative.
4. Share perspectives on the experience of human dissection with colleagues.
5. Identify the role of colleagues in providing support.
Anatomy Lesson II: History of Medicine (Anatomy)

1. Identify historical events that led to today's study of Anatomy.
2. Recognize pioneers in the study, understanding and teaching of Anatomy.
3. Describe the role of artists in the dissemination of anatomical knowledge.
4. Define the evolution of the "anatomy lesson" (from cadavers to imaging aids).
5. Appreciate the importance of anatomical knowledge in today's medical practice.

Anatomy Lesson III: Family Panel

1. Develop a deeper understanding of the reasons that people become donors.
2. Develop an increased awareness of the impact and influence such a decision has on family members.
3. Consider how you or your family members would approach the issue of becoming a donor.

Anatomy Lessons I - Cadaver as First Teacher - Groups A and B

1. Identify the values involved in approaching the cadaver as one of your "first teachers" in medical school.
2. Describe the role of culture in attitudes towards death and the use of cadavers.
3. Describe experiences with human dissection in the form of a narrative.
4. Share perspectives on the experience of human dissection with colleagues.
5. Identify the role of colleagues in providing support.

Autonomic Nervous System I & II

1. Describe the anatomical locations of the neuronal cell bodies for the lower motor neurons, primary sensory neurons, pre- and postganglionic sympathetic neurons, and pre- and postganglionic parasympathetic neurons innervating the trunk.
2. Describe the distal sites of innervation (termination) and function of the axons present in the roots, rami and nerves of the peripheral nervous system (use the practice questions as a guide).
3. Define visceral referred pain and describe its importance in the clinical presentation of angina and appendicitis (159, 257, 259).
Circulatory System I - III

1. In general terms, describe the structure, organization, and function of the three basic layers (tunics) of blood vessels.
2. In general terms, discuss the morphological characteristics that distinguish the different types of blood vessels.
3. Discuss the general structure and functional significance of portal systems, anastomoses and end arteries.
4. Describe the blood supply of the upper extremity including the arterial anastomoses associated with the shoulder, elbow and palm.
5. Describe the blood supply of the lower extremity including the arterial anastomoses associated with the hip and knee.
6. Describe the site of compression (ligation) of the following arteries to control bleeding while maintaining collateral blood flow: axillary (726, 727); brachial (742); femoral (560) and popliteal (604).
7. Describe the general pattern of lymphatic drainage of the upper and lower extremities including the major groups of lymph nodes.
8. In general terms, discuss the morphological characteristics of the lymphatic system.
9. Contrast lymphatic drainage of the right vs. left upper extremity.

Dissection Lab Check-In

1. Become familiar with the physical arrangement of the dissection laboratory including the location of the humidor, safety equipment, computers, and shared dissection tools.
2. Meet the members of your dissection group.
1. On dissected cadavers or cadaver specimens, identify the structures in bold in the dissection instructions of the CADAVER DISSECTION GUIDE - CHAPTERS 2 - 3 (Back and Lower Extremity) (structures in italics are not required).

2. On natural bone specimens, identify the bones and the landmarks listed under "Bony landmarks" in the "Outline of Anatomical Structures - Unit I". Describe the functions of the bony landmarks.

3. On radiological images, identify the structures listed under "Imaging" in the CADAVER DISSECTION GUIDE - CHAPTERS 2 - 3 (Back and Extremity).

4. On cross-sectional images taken from the VHD, identify bones, muscles, organs and major vessels listed under the "Imaging" section of the CADAVER DISSECTION GUIDE - CHAPTERS 2 - 3 (Back and Lower Extremity).

5. Observe and then describe the anatomical relationships between the structures listed under "Bony Landmarks" and bold structures to identify in the CADAVER DISSECTION GUIDE - CHAPTERS 2 - 3 (Back and Lower Extremity). The specific major relationships are in the yellow boxes in the CADAVER DISSECTION GUIDE.

6. Describe the synovial classification and movements occurring at the joints of the back.

7. Describe the general attachments (as listed under muscles in the "B" pages of the Study Guide), primary functions and innervation of the muscles acting at the joints of the back.

8. Observe and describe the anatomical relationships between the following set of structures: vertebral column, epidural space; dura mater; arachnoid mater; subarachnoid space; pia mater and spinal cord.

9. Describe the proper anatomical location and rationale for this location when performing the following procedures:
   (A) Epidural anesthesia (461)
   (B) Spinal anesthesia (506)
   (C) Lumbar puncture (505)

10. Observe and describe the relationships between the intervertebral foramen, roots of a spinal nerve and the intervertebral disc.

11. Observe and describe the boundaries of the triangle of auscultation and the lumbar triangle.

12. On painted natural bone specimens, identify the muscle attachments for the inominate, femur, patella and proximal tibia (exclude the muscles attaching to the linea aspera of the femur).

13. Describe the synovial classification and movements occurring at the joints of the lower extremity.

14. Describe the general attachments, primary functions and innervation of the muscles acting at the hip and knee joints.

15. Observe and describe the boundaries and contents of the femoral triangle and adductor canal.

16. On painted natural bone specimens, identify the muscle attachments for the distal tibia, fibula, tarsals, metatarsals and phalanges (exclude the intrinsic muscles of the foot).

17. Describe the general attachments, primary functions and innervation of the muscles acting at ankle joint and the joints of the foot.

18. Observe and describe the boundaries and contents of the popliteal fossa.

19. Observe and describe the anatomical relations of the structures positioned posterior to the distal tibia.

20. Observe and describe the anatomical relations of the structures positioned anterior to the ankle.

21. Observe and describe the anatomical relations of the structures positioned posterior to the lateral malleolus.

22. On painted natural bone specimens, identify the attachments for the following ligaments: iliofemoral, pubofemoral; ischiofemoral; medial and lateral colaterals of the knee; anterior and posterior cruciate; deltoid; and lateral ligament of the ankle.

23. On radiological images, identify the structures listed under "Imaging" in the CADAVER DISSECTION GUIDE - CHAPTER 4 (Upper Extremity).
24. On cross-sectional images taken from the VHD, identify bones, muscles, organs and major vessels listed under the "Imaging" section of the CADAVER DISSECTION GUIDE - CHAPTER 4 (Upper Extremity).

25. Observe and then describe the anatomical relationships between the structures listed under "Bony Landmarks" and bold structures to identify in the CADAVER DISSECTION GUIDE - CHAPTER 4 (Upper Extremity). The specific major relationships are in the yellow boxes in the CADAVER DISSECTION GUIDE.

26. On painted natural bone specimens, identify the muscle attachments for the clavicle, sternum, scapula, humerus, ulna, radius, carpals, metacarpals, and phalanges (exclude the intrinsic muscles of the hand).

27. Describe the synovial classification and movements occurring at the joints of the upper extremity.

28. Describe the general attachments (as listed under muscles in the "B" pages of the Study Guide), primary functions and innervation of the muscles acting at the sternoclavicular, acromioclavicular, scapulothoracic, glenohumeral and elbow joints.

29. Observe and describe the anatomical relationships of the medial and lateral epicondyles of the humerus to the surrounding nerves and arteries.

30. Describe the boundaries (and content) of the axilla, quadrangular space, triangular space, triangular interval and cubital fossa.

31. Describe the general attachments, primary functions and innervation of the muscles acting at the elbow and wrist joints, and the joints of the hand.

32. Observe and describe the anatomical relationships of the structures passing on the dorsal aspect of the wrist.

33. Observe and describe the structure and function of the dorsal digital expansions.

34. Observe the relationships of the flexor retinaculum (transverse carpal ligament) to the surrounding structure. Describe the structures passing superficial or deep to the flexor retinaculum at the wrist.

35. Observe and describe the physical examination sites for taking femoral, popliteal, posterior tibial, dorsalis pedis, branchial and radial pulses. Describe the anatomical structures adjacent to the arteries at these sites.

36. Define tenosynovitis and describe the anatomical basis for pattern of spread (via synovial sheaths) of infections in the wrist, palm and fingers (789).

37. On painted natural bone specimens, identify the attachments for the following ligaments: coracoclavicular; and glenohumeral.

38. On dissected cadavers or cadaver specimens, identify the structures in bold in the dissection instructions of the CADAVER DISSECTION GUIDE - CHAPTER 4 (Upper Extremity) (structures in italics are not required).

39. On natural bone specimens, identify the bones and the landmarks listed under "Bony landmarks" in the "Outline of Anatomical Structures - Unit I". Describe the functions of the bony landmarks.
1. On dissected cadavers or cadaver specimens, identify the structures in bold in the dissection instructions of the CADAVER DISSECTION GUIDE - CHAPTER 5 (Thorax) (structures in italics are not required).

2. On natural bone specimens, identify the bones and the landmarks listed under "Bony landmarks" in the "Outline of Anatomical Structures - Unit II". Describe the functions of the bony landmarks.

3. On radiological images, identify the structures listed under "Imaging" in the CADAVER DISSECTION GUIDE - CHAPTER 5 (Thorax).

4. On cross-sectional images taken from the VHD, identify bones, muscles, organs and major vessels listed under the "Imaging" section of the CADAVER DISSECTION GUIDE - CHAPTER 5 (Thorax).

5. Observe and then describe the anatomical relationships between the structures listed under "Bony Landmarks" and bold structures to identify in the CADAVER DISSECTION GUIDE - CHAPTER 5 (Thorax). The specific major relationships are in the yellow boxes in the CADAVER DISSECTION GUIDE.

6. Describe the synovial classification and movements occurring at the joints of the thorax.

7. Describe the general attachments (as listed under muscles in the "B" pages of the Study Guide), primary functions and innervation of the muscles of the thorax.

8. Describe the relationships of the breast to the anterior thoracic wall (including superficial fascia, deep fascia, serratus anterior muscle, pectoralis major muscle and ribs).

9. Describe the blood supply, lymphatic drainage and innervation of the breast.

10. Observe and describe the anatomical relations of the parietal and visceral layers of pleura to their associated structures.

11. Observe and describe the surface features of the lung.

12. Describe and demonstrate a bronchopulmonary segment.

13. Observe and describe the anatomical relationships between the structures at the hilus of the lung.

14. Observe and describe the anatomical relations of the pericardium to the heart.

15. Observe and describe the surface and internal features of the heart and their relationship to the coronary circulation.

16. Identify the surrounding structures that are most commonly affected by aneurysms of the ascending aorta, aortic arch (175) and descending (abdominal) aorta (319).

17. On dissected cadavers or cadaver specimens, identify the structures in bold in the dissection instructions of the CADAVER DISSECTION GUIDE - CHAPTER 5 (Abdomen) (structures in italics are not required).

18. On natural bone specimens, identify the bones and the landmarks listed under "Bony landmarks" in the "Outline of Anatomical Structures - Unit II". Describe the functions of the bony landmarks.

19. On radiological images, identify the structures listed under "Imaging" in the CADAVER DISSECTION GUIDE - CHAPTER 5 (Abdomen).

20. On cross-sectional images taken from the VHD, identify bones, muscles, organs and major vessels listed under the "Imaging" section of the CADAVER DISSECTION GUIDE - CHAPTER 5 (Abdomen).

21. Observe and then describe the anatomical relationships between the structures listed under "Bony Landmarks" and bold structures to identify in the CADAVER DISSECTION GUIDE - CHAPTER 5 (Abdomen). The specific major relationships are in the yellow boxes in the CADAVER DISSECTION GUIDE.

22. Describe the general attachments and primary functions of the ligaments of the abdomen.

23. Describe the general attachments, primary functions and innervation of the muscles of the abdomen.

24. Observe and describe the anatomical boundaries of the inguinal canal and how they relate to direct and indirect inguinal hernias.
25. Observe and describe the relative positions of the abdominal viscera in relation to the four quadrants of the anterior abdominal wall. Describe the changes that occur during respiration.

26. Observe and describe the approximate boundaries of the greater and lesser sacs of the peritoneal cavity.

27. Observe and describe the anatomical relations of the parietal and visceral layers of peritoneum to their associated structures.

28. Observe, and compare and contrast the relationships of intraperitoneal, retroperitoneal, secondarily retroperitoneal and extraperitoneal structures to the peritoneal cavity.

29. Observe and describe the distribution of visceral fat in the abdominal cavity.

30. Observe and describe the components of the urinary system and their locations.

31. Describe the gross (surface and internal) structure of the kidney and its vascular supply.

32. Observe and describe the anatomical relationships between kidneys and the adjacent muscles.

33. Observe and describe the anatomical relationships between the duodenum, pancreas and adjacent vessels.

34. Identify structures that traverse the diaphragm and through which openings.

35. On dissected cadavers or cadaver specimens, identify the structures in bold in the dissection instructions of the CADAVER DISSECTION GUIDE - CHAPTER 5 (Pelvis and Perineum) (structures in italics are not required).

36. On natural bone specimens, identify the bones and the landmarks listed under "Bony landmarks" in the "Outline of Anatomical Structures - Unit II". Describe the functions of the bony landmarks.

37. On radiological images, identify the structures listed under "Imaging" in the CADAVER DISSECTION GUIDE - CHAPTER 5 (Pelvis and Perineum).

38. On cross-sectional images taken from the VHD, identify bones, muscles, organs and major vessels listed under the "Imaging" section of the CADAVER DISSECTION GUIDE - CHAPTER 5 (Pelvis and Perineum).

39. Observe and then describe the anatomical relationships between the structures listed under "Bony Landmarks" and bold structures to identify in the CADAVER DISSECTION GUIDE - CHAPTER 5 (Pelvis and Perineum). The specific major relationships are in the yellow boxes in the CADAVER DISSECTION GUIDE.

40. Describe the general attachments and primary functions of the ligaments of the pelvis.

41. Describe the general attachments, primary functions and innervation of the muscles of the female pelvis and perineum.

42. Observe and describe the boundaries and anatomical relations of the subdivisions of the pelvis and their associated viscera.

43. Observe and describe the anatomical relationships between the uterus, fallopian tubes and ovaries, and the subdivisions of the broad ligament.

44. Describe the structure, innervation and blood supply of the female external genitalia and perineum.

45. Observe and describe the boundaries and contents of the superficial and deep pouches in the female.

46. Describe the general attachments, primary functions and innervation of the muscles of the male pelvis and perineum.

47. Observe and describe the arrangement of the layers of the scrotum and spermatic cord and how the layers relate to the anterior abdominal wall.

48. Describe the structures traversed by the spermatozoa from the seminiferous tubules of the testes to the navicular fossa of the penis.

49. Describe the structure, innervation and blood supply of the male external genitalia and perineum.

50. Observe and describe the boundaries and contents of the superficial and deep pouches in the male.
Dissection Lab Unit III

1. On dissected cadavers or cadaver specimens, identify the structures in bold in the dissection instructions of the CADAVER DISSECTION GUIDE - CHAPTER 6 (Head and Neck) (structures in italics are not required).

2. On natural bone specimens, identify the bones and the landmarks listed under "Bony landmarks" in the "Outline of Anatomical Structures - Unit III". Describe the functions of the bony landmarks.

3. On radiological images, identify the structures listed under "Imaging" in the CADAVER DISSECTION GUIDE - CHAPTER 6 (Head and Neck).

4. On cross-sectional images taken from the VHD, identify bones, muscles, organs and major vessels listed under the "Imaging" section of the CADAVER DISSECTION GUIDE - CHAPTER 6 (Head and Neck).

5. Observe and then describe the anatomical relationships between the structures listed under "Bony Landmarks" and bold structures to identify in the CADAVER DISSECTION GUIDE - CHAPTER 6 (Head and Neck). The specific major relationships are in the yellow boxes in the CADAVER DISSECTION GUIDE.

6. Describe the general attachments (as listed under muscles in the "B" pages of the Study Guide), functions and innervation of the muscles of facial expression.

7. On natural bone specimens, identify the approximate attachments (painted regions of bony landmarks) of the following muscles: anterior digastric; buccinator; depressor anguli oris; genioglossus; geniohyoid; lateral pterygoid; levator anguli oris; levator labii superioris; masseter; medial pterygoid; mentalis; mylohyoidorbicularis oculi; posterior digastric; sternocleidomastoid; temporalis and zygomaticus major.

8. Observe and describe the anatomical relations of the parotid gland and duct to the branches of the facial nerve. Describe the structures most at risk for injury during surgery on the salivary (i.e., parotid, submandibular and sublingual) glands (926, 950). Describe the structures most at risk for injury with a cheek laceration.

9. Observe and describe the relationship of the scalp to the cranial vault. Discuss why an infection in one of the layers is potentially very dangerous (860, 864).

10. Observe and describe the relationships of the facial artery and vein to the surrounding structures of the face.

11. Observe and describe the fascial layers of the neck. Describe the preferred locations for performing emergent and non-emergent tracheostomies. Describe the anatomic basis for the different preferred locations. Name the structures/layers that are passed through during this surgery (1045).

12. Observe and describe the boundaries and contents of the anterior triangle of the neck.

13. Describe the general attachments, functions and innervation of the muscles of the neck.

14. Observe and describe the relationships between the hyoid bone, larynx and trachea.

15. Observe and describe the relationships of the thyroid gland to the trachea and recurrent laryngeal nerves. Describe the nerves at risk for injury during thyroid surgery and the clinical findings associated with these injuries (1043, 1045).

16. Observe and describe the boundaries and contents of the posterior and suboccipital triangles of the neck.

17. Describe the synovial classification and movements occurring at the joints of the cervical spine, and the atlantooccipital joint.

18. Describe the attachments and functions of the ligaments supporting the atlanto-occipital and atlanto-axial joints.

19. Observe and describe the relationships of the vertebral artery to the cervical vertebrae and occipital bone.

20. Observe and describe the relationships of the greater occipital nerve to the cervical vertebrae and the muscles of the suboccipital triangle.

21. Describe the general attachments, functions and innervation of the muscles of mastication.

22. Observe and describe the relationships between the mandible, muscles of mastication, maxillary artery, and auriculotemporal, inferior alveolar and lingual nerves.
23. Observe and describe the relationships between the bones of the skull, dura mater and the subdivisions of the brain.
24. Observe and describe the relationships between the skull, middle meningeal artery and dura mater.
25. Observe and describe the relationships between the skull and the dural venous sinuses.
26. Observe and describe the relationships between the surface of the brain, the cranial nerves, the dura mater and the skull.
27. Observe and describe the relationships between the midbrain, oculomotor nerve and tentorial notch.
28. Observe and describe the relationships between the superior orbital fissure, cavernous sinus, internal carotid artery, and cranial nerves III, IV, V and VI.
29. Describe the general attachments, functions and innervation of the extraocular muscles.
30. Observe and describe the boundaries of the nasal cavity and the nasal pharynx. Describe the structures that form the boundaries of these spaces.
31. Observe and describe the surface features of the lateral wall of the nasal cavity.
32. Describe the general boundaries, openings and contents of the pterygopalatine fossa.
33. Observe and describe the relationships of the infraorbital nerve (MSA and ASA) to the maxillary sinus.
34. Describe the general attachments, functions and innervation of the muscles of the palate and pharynx.
35. Observe and describe the boundaries of the oral cavity and the pharynx.
36. Observe and describe the surface features of the pharynx and larynx and their relationships to the following spaces: vallecula; piriform recess; vestibule; ventricle; and infraglottic cavity.
37. Describe the general attachments, functions and innervation of the muscles of the tongue, palate, pharynx and larynx.
38. Observe and describe the relationships between the cervical vertebrae (bodies), anterior longitudinal ligament, prevertebral muscles, retropharyngeal space and pharyngeal wall.
39. Observe and describe the relationships between the pharyngeal constrictors and the following structures: stylopharyngeus muscle; glossopharyngeal, internal laryngeal and recurrent laryngeal nerves; and superior and inferior laryngeal arteries.
40. Observe and describe the relationships between the lingual artery, hypoglossal nerve and the hyoglossus and mylohyoid muscles.
41. Observe and describe the relationships between the sublingual gland, submandibular gland and duct, lingual nerve and mylohyoid muscle.
42. Observe and describe the physical examination sites for taking facial, temporal and carotid pulses. Describe the anatomical structures adjacent to the arteries at these sites.
1. Define the following terms, describe their location (where relevant), and discuss how they relate to objectives 5 - 9:

- oocyte
- sperm
- fertilization
- cranial, caudal, dorsal, ventral
- zygote
- cleavage
- blastomere
- morula
- blastocyst
- blastocoel
- inner cell mass (embryoblasts)
- outer cell mass (trophoblasts)
- syncytiotrophoblast
- cytotrophoblast

2. Define the following terms, describe their locations (where relevant), and discuss how they relate to objectives 5 - 9:

- implantation
- endometrium
- ectopic pregnancy
- hypoblast
- epiblast
- amniotic cavity
- chorionic cavity
- uteroplacental circulation
- germ layers (ectoderm, mesoderm, endoderm)
- gastrulation
- epithelial-to-mesenchymal transition
- primitive streak, groove, node and pit

3. Define the following terms, describe their location (where relevant), and discuss how they relate to objectives 5 - 9:

- buccopharyngeal membrane
- notochord
- cloacal membrane
- mesenchyme
- paraxial mesoderm
- intermediate mesoderm
- lateral plate mesoderm
- somatic/parietal layer
- splanchnic/visceral layer
- somatopleure
- splanchnopleure
4. Define the following terms, describe their location (where relevant), and discuss how they relate to objectives 5 - 9:

- neural plate, groove, fold, tube, canal
- cranial & caudal neuropore
- neural crest
- intraembryonic cavity
- head fold, tail fold,
- lateral body folds
- foregut
- midgut
- hindgut
- cardiogenic field

5. Describe the general sequence of developmental stages from fertilization through the end of the fourth week (body folding) and how the developmental stages relate to anatomical locations in the female reproductive tract.

6. Describe the general cell movements of gastrulation during the 2nd week of gestation and the formation of the three germ layers by the 3rd week.

7. Describe the events that occur during neurulation and how incomplete neurulation results in spina bifida or anencephaly (forms of neural tube defects).

8. In general terms, discuss the ectodermal, mesodermal and endodermal derivatives present in the adult.

9. In general terms, discuss how the embryo folds both cranio-caudally and bilaterally to generate a three-dimensional body including the gut tube, and describe how failure of lateral folding can lead to mild to severe (anterior body) wall defects.
1. Describe the anatomical relationship of the first 4 pharyngeal arches, 4 endodermal pouches and 4 ectodermal clefts at 4 weeks gestation, as these structures first form.

2. Describe the generic structure of a pharyngeal arch, considering ectodermal, endodermal and mesenchymal components.

3. Discuss the types of tissues that are produced by the cranial neural crest: including sensory neurons, facial cartilage/bone, muscle connective tissue, dentine-producing odontoblasts, pigment cells (e.g. melanocytes) and cardiac tissue (septal mesenchyme).

4. Describe how ectodermal clefts and endodermal pouches have changed by week 7 of gestation, and determine their derivatives in the adult.

5. Describe how the oral and nasal cavities form, initially as separate spaces, then become remodeled to communicate with each other.

6. Explain how cervical sinus fistulas and cysts form when pouch/cleft development is incomplete.

7. List the muscular and skeletal derivatives of the 1st, 2nd, 3rd, and 4th-6th arches.

8. Discuss which cranial nerves innervate derivatives of the 1st, 2nd, 3rd, and 4th arches.

9. List the glandular derivatives of the 2nd, 3rd and 4th endodermal pouches, and describe each gland primordium’s migration during development.

10. Describe the embryonic origin of the thyroid gland from the endoderm lining the floor of the pharynx, and its migration to the anterior neck, and how this process can go awry, resulting in thyroglossal duct cysts or ectopic thyroid glands.

11. Describe how the tongue first forms from swellings in the first arch, followed by overgrowth of the 2nd arch by the 3rd and 4th arches, and further how occipital somitic mesoderm gives rise finally to the lingual musculature.

12. Describe the embryonic development of taste buds and their innervation within the developing tongue.

13. Describe how the face forms via growth and fusion of the frontonasal, maxillary, and mandibular prominences, and how failure of these processes results in facial clefting.

14. Describe how the primary and secondary palates form from the maxillary prominences, and how, when these processes fail, cleft palate can result.

15. Describe the general sequence of events occurring in neural crest-derived mandibular mesenchyme and the ectodermally derived dental lamina that result in tooth formation.

16. Describe the anatomic defect in each of the following conditions:
   (A) Cleft lip (946)
   (B) Cleft palate (949)
   (C) Thyroglossal duct cyst (1041)
   (D) Tracheoesophageal fistula (1049)
Embryology of the Peritoneal Cavity (and Digestive System)

1. Describe the early formation of the gut tube, and the basic derivatives and blood supply of the foregut, midgut and hindgut. List the adult derivatives of the embryonic dorsal and ventral mesenteries.
2. Discuss the consequences of stomach development and rotation on the formation of the lesser sac and the final positioning of the adjacent organs. Describe the basic development of the liver, gall bladder and pancreas.
3. Discuss the steps involved in the development of the small and large intestines, including herniation, rotation, retraction and fixation.
4. Discuss the origin and clinical consequences of an ileal (Meckel's) diverticulum (258). Describe the possible histological characteristics of this diverticulum that makes it particularly troublesome.
5. Discuss the origins and differences between an omphalocele, umbilical hernia and gastroschisis.
6. Discuss the clinical concerns of malrotation of the gut.
7. Describe the process by which the urorectal septum partitions the cloaca into the anorectal canal and the urogenital sinus.

Embryology of the Spine and Limbs

1. Describe the segmentation of paraxial mesoderm into somitomeres and somites, how the sclerotomes resegment to generate the vertebrae and intervertebral discs, and how segmentation of the somites imposes a segmental arrangement on the spinal nerves.
2. Diagram the division of somites into sclerotome, dermatome, and myotome. Describe the fates of the sclerotome, dermatome, and myotome.
3. Describe the steps by which muscle and skeletal elements are laid down in the developing limb.
4. Describe the organization and innervation of the myotomes into epimere and hypomere.
5. Identify the embryonic structures and germ layers that give rise to limbs.
6. Describe the significance of Apical Ectodermal Ridge (AER) in limb development.

Embryology of the Thorax

1. Describe the process by which the coelom (body cavity) forms.
2. Describe the transformation of the intraembryonic coelom through the process of embryonic folding.
3. List and describe the embryonic structures that contribute to the formation of the diaphragm. Describe the embryological basis for and consequences of congenital diaphragmatic hernias.
4. Describe the process by which the pleuropericardial membranes partition the thoracic cavity into pleural and pericardial compartments.
5. Describe the early development of the heart through the establishment of the primitive heart chamber regions and looping of the heart tube.
6. Describe the early development of the lung from the respiratory diverticulum of the foregut.
7. Describe the pathway of fetal circulation, the changes that occur after birth, and the remnants of fetal circulation that may be found in the adult.
Embryology of the Urogenital System
1. Describe the development of the mesonephric duct and the formation of the ureteric bud.
2. Describe the derivatives of the ureteric bud and the metanephric blastema.
3. Discuss the ‘ascent’ of the kidneys and its significance in anomalies of the kidney’s vascular supply.
4. Describe the partitioning of the cloaca, the development of the bladder and associated urethra.
5. Compare and contrast the early development of the testes and ovaries.
6. Discuss the general process of descent of the testes.
7. Discuss the contributions of the mesonephric and paramesonephric ducts to the genital ducts and organs in the male and female.
8. Compare and contrast the early development of the male and female external genitalia.

Head & Neck Circulatory System I - III
1. Describe the blood supply of the head and neck including the major arterial anastomoses associated with the branches of the thyrocervical, vertebral, external carotid and internal carotid arteries.
2. Describe the general structure of a dural venous sinus.
3. Describe the relationships between the venous drainage of the face and orbit, the pterygoid venous plexus and the cavernous sinus.
4. Trace the flow of CSF from its exit from the ventricular system to the superior sagittal sinus.
5. Describe the type of head trauma most likely to lead to a pterion fracture and the vessel most at risk for injury (874).
6. Describe the vessels disrupted in the following conditions:
   (A) Subdural hematoma (876)
   (B) Subarachnoid/intra-cranial hemorrhage (876)
   (C) Epidural hematoma (876)
   (D) Epistaxis (964)
7. Describe the most common physical examination findings and clinical implications in superior vena cava syndrome (1008).
8. Describe the pattern of lymphatic drainage of the head and neck including the major groups of lymph nodes.

Human Body Block Orientation
1. Describe the resources available for learning the block content.
2. Describe the assessment process and block grade.
3. Discuss the learning objectives and their role in the assessment process.
4. Demonstrate professional behavior by being punctual, responsible and courteous while attending and participating in lectures, lecture hall discussions, small group sessions and laboratories (General Block Objective).
5. Give and receive constructive feedback on academic and professional performance including course and instructor evaluations (General Block Objective).
6. Communicate effectively with fellow students and faculty in interactive learning activities (General Block Objective).
7. Participate in the education of fellow students (General Block Objective).
8. Demonstrate the ability to locate and learn anatomical and clinical knowledge not presented in a lecture setting (General Block Objective).
Introduction to Anatomy

1. Describe the anatomical position and the imaginary planes (median, sagittal, coronal and transverse) that pass through the body in the anatomical position.

2. Describe the various terms of relationship (and comparison) used to compare the relative position of two structures with each other (anterior [ventral] / posterior [dorsal]; medial / lateral; superior [rostral] / inferior [caudal]; proximal / distal and superficial / deep).

3. Discuss the general etymological basis of anatomical terminology.

Introduction to Clinical Anatomy

1. Define the scope of Clinical Anatomy.

2. Describe the application of anatomic principles to clinical decision making.

3. Recognize the importance of anatomical knowledge to procedural medical practice.

4. Recognize the importance of anatomical knowledge to non-procedural medical practice.

5. Describe and identify available resources in Clinical Anatomy.

Introduction to Head and Neck I & II

1. Describe the anatomical relations of the parotid gland and duct to the branches of the facial nerve.

2. Compare and contrast the bony sutures of the skull with the synovial and fibrous joints previously encountered in the extremities and trunk.

3. Describe the fascial layers of the neck.

4. Describe the boundaries and contents of the triangles of the neck.

5. Compare and contrast the structure of cervical, thoracic and lumbar vertebrae.

6. Describe the synovial classification and movements occurring at the joints of the cervical spine, and the atlantooccipital joint.

7. Describe the relationships of the greater occipital nerve to the cervical vertebrae and the muscles of the suboccipital triangle.

Introduction to Imaging I

1. Describe the basic physical basis of diagnostic imaging modalities.

2. Describe patient safety concerns and practical limitations associated with specific imaging modalities.

3. Follow standard personnel safety protocols when working near imaging equipment.

Introduction to Imaging II

1. Describe a systematic approach to viewing radiographic images.

2. Describe and recognize standard image orientations, projections and conventions.

3. Describe anatomic relationships on radiographic images.

4. Use proper terminology for description of radiologic findings.

5. Discuss the appearance of 3D structures in 2D imaging studies.

6. Describe the 5 basic plain film densities and how they appear on radiographs.
Introduction to the Anatomy Lab I & II

1. Review and discuss student conduct in the dissection lab.
2. Demonstrate professional behavior by treating the cadavers and anatomical specimens with respect, dignity and the appropriate decorum.
3. Review and discuss the dissection lab safety rules.
4. Review and discuss the procedures for the dissection exercises.
5. Demonstrate professional behavior by being punctual and well prepared to participate fully in all scheduled dissection laboratories.
6. Communicate effectively with fellow students while teaching the content of dissection exercises.
7. Review and discuss dissection equipment and basic dissection technique.

Introduction to the VHD I-II

1. Describe the Visible Human Dataset, its advantages and shortcomings, and how it can best be utilized in the Human Body block and carried forward into other blocks and your career. Discuss the resolution, authenticity, normalization and virtuality of the Visible Human Data Set.
2. Describe the organization and structure of the VH Dissector as a window into the Visible Human and your patient for the next four years. Discuss the different modes of anatomical presentation covering systemic, regional, cross sectional, and surface approaches.
3. Describe the basic methods for accessing structures in the VH Dissector and how they will be used in different situations. Discuss the use of Regional organization to best mimic the dissection laboratory, System hierarchy to parallel classroom presentations, Index and Search for immediate access to a specific structure and Cross Sections for an appreciation of clinical imaging.
4. Describe how to use lessons in the VH Dissector for learning. Discuss the lessons designed to accompany the Dissection Laboratory and the organization used for integration of skeletal, soft tissue, and visceral structures and clinical imaging.
5. Describe features in the VH Dissector for self-testing. Discuss the use of skin opacity for testing surface anatomy concepts and the use of identification labels for reinforcing structure identification. Discuss the hierarchy of both the Index of structure names and the System descriptions and how it can be used to review complete systems.

Muscle

1. Describe the classification of muscle and where the three types of muscle are located in the body.
2. Discuss the basic functions of skeletal muscle.
3. Discuss the basis for skeletal muscle nomenclature.
4. In very general terms, describe the process by which the depolarization of a motor neuron leads to the contraction of a skeletal muscle fiber.
5. Describe the fascicular arrangement of muscle fibers and how the fascicles relate to the three connective tissue layers (endo- peri- and epimysium) associated with skeletal muscle.
6. Compare and contrast the gross appearance and general function of muscles having a parallel or a pennate fiber orientation.
Nervous System I - VII

1. Define, compare and contrast the following sets of terms: central nervous system / visceral (autonomic) nervous system.
2. Describe the basic structure, function and location(s) of lower motor neurons and primary sensory neurons.
3. Describe the basic functions and anatomical locations of astrocytes, oligodendrocytes, microglia and Schwann cells.
4. Describe the anatomical relationships between the following set of structures: vertebral column, epidural space; dura mater; arachnoid mater; subarachnoid space; pia mater and spinal cord.
5. Discuss the general functions of the spinal cord.
6. Describe the basic cross-sectional anatomy of the spinal cord and the associated spinal nerves.
7. Describe the segmental organization of the spinal cord and spinal nerves. Discuss the relationship between spinal cord segmental levels and the corresponding levels of the vertebral column.
8. Define gray matter and white matter.
9. Describe the structural organization and function(s) of the components of a peripheral nerve.
10. Define, compare and contrast the following terms as they apply to the nervous system: dermatome; sensory cutaneous field; and myotome.
11. Describe the anatomical basis for the dermatomal distribution of herpes zoster (shingles) outbreak (96).
12. Describe the segmental innervation (reflex or specific embryonic origin) of the following muscles of the extremities: rhomboids, serratus anterior; deltoid; supraspinatus; infraspinatus; teres minor; biceps brachii (741); triceps; muscles of the hand; quadriceps femoris (559); gastrocnemius; and soleus (625).
13. Describe (draw) the brachial plexus.
14. Describe (draw) the lumbar and sacral plexuses.
15. Describe the distal sites of innervation (termination) and function of the axons present in the roots, rami and nerves of the peripheral nervous system (use the practice questions for guidance with this objective).
16. Define "referred pain" and describe why hip abnormalities can present with knee pain.
17. Describe the most common causes, anatomical basis and clinical findings of the following common nerve injuries:
   A) Erb-Duchenne (upper brachial plexus injury) palsy (729)
   B) Klumpke (lower brachial plexus injury) palsy (729)
   C) Long thoracic nerve (709)
   D) Spinal accessory nerve (710)
   E) Thoracodorsal nerve (710)
   F) Suprascapular nerve (1009)
   G) Axillary nerve (710, 815)
   H) Radial nerve (radial groove)
18. Describe the most common causes, anatomical basis and clinical findings of the following common nerve injuries:
   I) Median nerve (pronator syndrome, 768)
   J) Median nerve (carpal tunnel, 790)
   K) Ulnar nerve (elbow, 769)
   L) Ulnar nerve (ulnar canal syndrome, 792)
   M) Superior gluteal nerve injury (581)
   N) Sciatic nerve injury (582)
   O) Common fibular nerve injury (605)
   P) Tibial nerve injury (605, 666)
19. Describe the organization of the autonomic nervous system.
20. Compare and contrast the structure and function of the divisions of the autonomic nervous system.
Nervous System I - VIII

1. Describe the general boundaries of the subdivisions of the cranial cavity.
2. Describe the general subdivisions of the brain.
3. Describe the anatomical relationships between the following set of structures: skull; dura mater; arachnoid mater; subarachnoid space; pia mater and brain.
4. Compare and contrast the epidural, subdural and subarachnoid spaces associated with the brain and spinal cord.
5. Describe the relationships of the cranial nerves to the surface features of the brainstem.
6. Describe the distal sites of innervation (termination) and function(s) of the axons present in the roots, rami and nerves (cervical and cranial) of the peripheral nervous system (use the practice questions as a guide).
7. Describe the anatomical location of the neuronal cell bodies for the lower motor neurons, primary sensory neurons, postganglionic sympathetic neurons, and pre- and postganglionic parasympathetic neurons innervating structures of the head and neck.
8. Describe the procedures for testing cranial nerves II, III, V, VII, IX, X, XI and XII.
9. Describe the most common physical examination findings of patients with the following eye related injuries: (A) Horner's syndrome (913, 1017) (B) Cranial nerve III, IV and VI palsies (911, 913)
10. Describe the physical examination findings of a patient with a cranial nerve VII palsy and why this patient is at risk for a corneal abrasion (861, 863).
11. Describe the most common clinical findings in trigeminal neuralgia (862).
12. Describe the general boundaries and openings to and from the pterygopalatine fossa. Describe the structures that traverse this space.

Online Clinical Learning Module: Case 1

1. Identify features of a typical vertebra and the intervertebral joints.
2. Identify the components of the spinal nerve from spinal roots to primary rami.
3. Describe sites where components of the spinal nerve can be compressed.
4. Describe the dermatomes and the landmarks of the lower extremity.

Online Clinical Learning Module: Case 10

1. Identify the meningeal layers.
2. Draw the flow of cerebrospinal fluid (CSF) from the choroid plexus to the subarachnoid space.
3. Identify sites where infection may spread into the cranial cavity.
4. Describe the innervation of the meninges and the pathogenesis of headache.

Online Clinical Learning Module: Case 2

1. Identify relevant knee anatomy and understand each structure’s function.
2. Differentiate which maneuvers evaluate the integrity of each anatomical structure and formulate a comprehensive evaluation process for the knee.
3. Describe common mechanisms of injury to each ligament in the knee and when each maneuver should be performed.
**Online Clinical Learning Module: Case 3**

1. Describe the mechanism, spinal cord segments, named terminal branches, and the motor and sensory deficits of an upper brachial plexus injury.

2. Describe the mechanism, spinal cord segments, named terminal branches, and the motor and sensory deficits of a lower brachial plexus injury.

3. Describe the mechanism, spinal cord segments, named terminal branches, and the motor and sensory deficits of a cord injury of the brachial plexus.

**Online Clinical Learning Module: Case 4**

1. Describe the course and area supplied by the right and left coronary arteries, respectively.

2. Describe the most common sites of occlusion of the coronary arterial circulation.

3. Identify the right and left coronary arteries and their branches in coronary angiograms.

4. Describe common therapeutic approaches for restoring blood flow within the coronary circulation.

**Online Clinical Learning Module: Case 5**

1. Describe the origin, branching pattern, and anatomical relations of the pulmonary arteries and pulmonary veins.

2. Describe the origin of the bronchial arteries, structures supplied, and sites of anastomosis with the pulmonary circulation.

3. Describe the most common presentation of pulmonary embolism.


**Online Clinical Learning Module: Case 6**

1. Describe the anatomy of the liver and its unique blood supply.

2. Describe or draw the anatomy of the portal venous system and the relevant anastomosis to the vena caval system.

**Online Clinical Learning Module: Case 7**

1. Describe the course of the facial nerve (CN VII).

2. Describe the functional components of the facial nerve.

**Online Clinical Learning Module: Case 8**

1. Describe the extraocular eye muscles of the orbit, their action and innervation.

2. Describe how each of the extraocular muscles is optimally tested in a clinical setting.

3. Describe the path of the Oculomotor nerve and the possible causes of Oculomotor nerve palsy.
Online Clinical Learning Module: Case 9

1. List the meningeal layers.
2. Identify the dural folds and sinuses.
3. Describe the vascular supply to the meninges and brain.
4. Describe the characteristic symptoms of epidural hematomas.
5. Compare and contrast epidural and subdural hematomas.

Regional Anatomy - Anterior Abdominal Wall (and Inguinal Canal)

1. List the layers of the anterior abdominal wall in relationship to the arcuate line.
2. Describe the anatomical boundaries of the inguinal canal and how they relate to direct and indirect inguinal hernias.
3. Describe the arrangement of the layers of the spermatic cord and how they relate to the anterior abdominal wall.
4. Describe the scrotal layers that are incised to reach the testes during surgery for testicular cancer.
5. Describe the migration and descent of the testes during development.
6. Define gubernaculum and processus vaginalis.
7. Describe the location, most common causes and clinical implications of the following hernias (197): Umbilical, Direct & Indirect Inguinal (212) and Femoral.
8. List the contents of the spermatic cord.
9. Define and describe the most common causes and clinical implications of the following abnormalities of the spermatic cord and testis: Torsion of the spermatic cord (214); caricocele (215).
10. Describe the layers of the scrotum and how they relate to the anterior abdominal wall.
11. Describe the major features of the testis and epididymis, including all their coverings.

Regional Anatomy - Back I & II

1. Discuss the general functions of the vertebral column (spine).
2. Describe the basic differences between cervical, thoracic and lumbar vertebrae.
3. Describe the primary and secondary curvatures of the spine.
4. Describe the most common abnormal curvatures (i.e., thoracic kyphosis, lumbar lordosis and scoliosis) of the vertebral column (480).
5. Describe the synovial classification, joint movement, and ligamentous restraint occurring in the spine.
6. Compare and contrast the orientation of the zygapophysial joints at cervical, thoracic and lumbar levels of the vertebral column. At a basic level, describe how the orientation of the joint limits motion in the different planes of movement.
7. Describe the basic structure of an intervertebral disc.
8. Differentiate between a bulging and a herniated disc.
9. Describe the relations between the intervertebral foramen, roots of a spinal nerve and the intervertebral disc.
10. Define spinal stenosis and describe its typical clinical manifestations (457, 460).
11. Describe the fascial (thoracolumbar) compartmentalization of the back.
12. Describe the general attachments, functions, innervation and blood supply of the muscles of the back.
Regional Anatomy - Oral Cavity and Pharynx

1. Describe the boundaries of the oral cavity and the oral pharynx. Describe the structures that form the boundaries of these spaces.
2. Describe the anatomy of a tooth including the following terms: crown; neck; root; root canal; pulp cavity; and cusp.
3. Describe the relative positions of the incisors, canines, premolars and molars in the upper and lower jaws.
4. Describe the relationships between the lingual artery, lingual nerve, hypoglossal nerve and the hyoglossus and mylohyoid muscles.
5. Describe the relationships between the sublingual gland, submandibular gland and duct, lingual nerve and mylohyoid muscle.
6. Define Ludwig's angina and explain (using anatomical planes) how this infection can spread to the neck and chest (988).
7. Discuss the general structure and function(s) of the external, middle and inner ear.
8. Describe the relationships of the following structures of the six "walls" of the middle ear: dura mater; facial nerve; mastoid air cells; internal jugular vein; internal carotid artery; auditory tube; tympanic membrane; tensor tympani; chorda tympani nerve; ossicles; stapedius; round window; oval window; and promontory.
9. Describe the most common clinical findings with otitis media and mastoiditis (978, 979).
10. Describe the nerve branch and artery most at risk for injury during placement of tympanic tubes in children for treatment of recurrent ear infections.

Regional Anatomy - Orbit

1. Describe the contents of the orbit and the relationships of the contents to the walls of the orbit.
2. Describe the relationships of the subarachnoid space to the optic nerve and eye.
3. Describe the three axes of rotation of the eye and their relationships to the axis of the orbit.
4. Describe the attachments, innervation and actions of the extraocular muscles.
5. Describe the relationships between the superior orbital fissure, cavernous sinus, internal carotid artery, and cranial nerves III, IV, V and VI.
6. Describe the relationships between the superior orbital fissure, optic canal, tendinous ring, ophthalmic artery, ophthalmic veins and cranial nerves II, III, IV, V (frontal, lacrimal & nasociliary) and VI.
7. Trace the flow of tears from the lacrimal gland to the inferior meatus of the nasal cavity.
Regional Anatomy - Pelvis and Perineum I & II

1. Describe the boundaries and anatomical relationships of the subdivisions of the pelvis and their associated viscera.
2. Describe the weak areas of the pelvic bones that are most commonly fractured and name the clinical implications of the pubo-obturator fracture (335).
3. Describe the structure and function of the pelvic diaphragms and perineal body, and the most common injuries to the pelvic floor during childbirth (348, 414).
4. Describe the different symptoms and locations (in relationship to the pectinate line) between internal and external hemorrhoids (416, 417).
5. Describe the anatomical relationships between the uterus, fallopian tubes and ovaries, and the subdivisions of the broad ligament.
6. Describe the structures traversed by the spermatozoa from the seminiferous tubules of the testes to the navicular fossa of the penis. Understand why an enlarging prostate (as in benign prostatic hypertrophy) often leads to urinary symptoms (381).
7. Describe the peripheral neural pathways for penile erection, emission and ejaculation.
8. Describe the structure, innervation and blood supply of the female and male external genitalia and perineum.
9. Describe the layers of the perineum including the superficial and deep pouches and their contents.
10. Describe the anatomical structures that limit the spread of an ischioanal abscess (416).
11. Describe the subdivisions of the male urethra. Contrast the male and female urethrae.

Regional Anatomy - Peritoneal Cavity and Digestive System I & II

1. Describe the relative positions of the abdominal viscera in relation to the four quadrants of the anterior abdominal wall. Discuss the changes that occur in the position of the liver during respiration.
2. Describe the approximate boundaries of the greater and lesser sacs of the peritoneal cavity.
3. Describe the anatomical relations of the parietal and visceral layers of peritoneum to their associated structures. Discuss the clinical significance of the paracolic gutters. Be able to describe the flow of ascitic fluid and/or pus in the abdominal cavity (223, 225).
4. Compare and contrast the relationships of intraperitoneal, retroperitoneal, secondarily retroperitoneal and extraperitoneal structures to the peritoneal cavity.
5. Describe the general functions of the digestive viscera and how their macroscopic structure relates to their function.
6. Describe the duct system associated with the exocrine function of the pancreas and liver.
7. Describe the location, most common causes and clinical implications of the following hernias (197): Hiatal (para-esophageal and sliding types; 254).

Regional Anatomy- Infratemporal Fossa

1. Describe the general boundaries and contents of the temporal and infratemporal fossae.
2. Describe the structure, synovial classification and movements occurring at the temporomandibular joint.
3. Describe the attachments and functions of the ligaments supporting the TMJ.
4. Describe the innervation of the temporomandibular joint.
5. Describe the attachments, innervation and functions of the muscles that move the jaw.
Regional Anatomy - Lower Extremity I - III

1. Discuss the functions of the lower extremity.
2. Discuss the differences in skeletal morphology between the male and female pelvis as they relate to lower extremity function.
3. Describe the boundaries and what traverses the greater and lesser sciatic foramina.
4. Describe the boundaries and contents of the femoral triangle.
6. Describe the clinical presentation of a patient with paralysis of the gluteus medius and minimus muscles (581).
7. Describe the compartmental organization of the lower extremity. Describe the primary attachments (as listed under muscles) and actions of the muscles located in each compartment. Describe the innervation and major arterial supply associated with each compartment.
8. Describe anterior compartment syndrome of the leg (540, 605) and compare/contrast the clinical findings and implications with posterior compartment syndrome of the leg (666).
9. Describe the synovial classification, movements and ligamentous restraints occurring at the joints of the lower extremity.
10. Define and differentiate between genu valgus and genu varus (661).
11. Describe the most common causes, clinical findings and ligaments injured in inversion and eversion ankle sprains (665).
12. Describe the clinical findings and implications of tarsal tunnel syndrome (666).
13. Describe the clinical findings and implications of plantar fasciitis (624).

Regional Anatomy - Nasal Cavity and Sinuses

1. Describe the boundaries of the nasal cavity and the nasal pharynx. Describe the structures that form the boundaries of these spaces.
2. Describe the surface features of the lateral wall of the nasal cavity.
3. Describe the drainage of the paranasal sinuses.
4. Describe the relationships of the infraorbital nerve (MSA and ASA) to the maxillary sinus.
5. Describe the general attachments, functions and innervation of the muscles of the palate and pharynx.
6. Describe the movements of the palate and pharynx occurring during swallowing.
7. Describe the relationships between the nasal pharynx, auditory tube and middle ear.

Regional Anatomy of the Larynx

1. Describe the general functions of the larynx.
2. Describe the surface features of the pharynx and larynx and their relationships to the following spaces: vallecula; piriform recess; vestibule; ventricle; and infraglottic cavity.
3. Describe the elements (cartilage, ligaments and membranes) of the laryngeal skeleton.
4. Describe the general attachments, functions and innervation of the muscles of the larynx.
5. Describe the movements and active muscles (tongue, palate, pharynx and larynx) occurring during swallowing.
Regional Anatomy of the Thorax I & II

1. Describe the organization of the trunk.
2. Describe the anatomical boundaries and contents of the subdivisions of the mediastinum.
3. Describe the anatomical relations of the pericardium to the heart.
4. Describe the surface and internal features of the heart.
5. Describe the basic anatomy of the cardiac conduction system.
6. Describe the flow of blood through the heart.
7. Describe the areas of cardiac auscultation and their relationship to the valves.
8. Describe the anatomical relations of the parietal and visceral layers of pleura to their associated structures.
9. Describe the basic anatomy of the conduction system of the lung.
10. Define bronchopulmonary segment and relate bronchopulmonary segments to the flow of blood through the lung.
11. Describe the anatomical basis for ventilation of the lung.

Regional Anatomy of the Upper Extremity I - III

1. Discuss the functions of the upper extremity.
2. Describe the compartmental organization of the upper extremity. Describe the primary actions of the muscles located in each compartment. Describe the innervation and major arterial supply associated with each compartment.
3. Describe the synovial classification, movements, and ligamentous restraints occurring at the joints of the upper extremity.
4. Describe the most common mechanisms of injury and tissues injured in shoulder dislocation (814), shoulder separation (813), dislocation of the radial head (816), and Colles fracture (685).
5. Discuss the structure and function of the dorsal digital expansions.
6. Describe the anatomy of the carpal tunnel and explain the clinical presentation and significance of carpal tunnel syndrome (790).

Skin and Connective Tissues

1. Describe the structural organization of skin tissue; in particular how are the epidermis, the dermis, and fatty tissue layers related to each other.
2. Describe the primary differences between thick (glabrous) skin and thin (hairy) skin.
3. Compare and contrast the basic structure, function and anatomical location of superficial and deep fascias.
4. Compare and contrast the basic structure, function and anatomical location of the three types of cartilage.
5. Compare and contrast the basic structure and function of synovial and solid joints.
6. Discuss the basis for synovial joint nomenclature.
7. At a basic level, describe the structure, gross appearance and function of bone.
8. At a basic level, discuss how bone remodeling leads to the formation of the bony landmarks studied in the anatomy lab.
9. Define the following terms: diaphysis; epiphysis; traction epiphysis; epiphyseal plate; and epiphyseal line. Discuss how these terms relate to adult bones.
Trunk Circulatory System I - IV

1. Describe the arterial supply of the thorax, abdomen, pelvis and perineum including the major anastomoses.

2. Define coarctation of the aorta and its most common location. Describe the clinical significance of a postductal coarctation (175).

3. Describe the rationale and location for ligation of the internal iliac artery to control pelvic hemorrhage (351).

4. Describe the venous drainage (caval,azygos,portal and vertebral) of the trunk.

5. Describe the major portal/systemic venous anastomoses.

6. Define portal hypertension and describe the most common physical examination findings and clinical implications of this abnormality (199, 284, 288).

7. Describe the pattern of lymphatic drainage of the trunk including the major groups of lymph nodes.

8. Describe the most common path/route of lymphatic drainage from the following cancers:
   (A) Breast (104)
   (B) Bronchogenic (125)
   (C) Ovarian (vs. labial) (401)
   (D) Testicular (vs. scrotal) (215)
   (E) Sigmoid colon (401)