

Virginia Western Community College

RAD 247

Cross-Sectional Anatomy

Prerequisites:

ARRT Registered or Registry Eligible.

Course Description:

This course is designed to introduce the student to realm of cross-sectional anatomy for the identification and recognition of structures in multiple planes necessary for diagnostic medical imaging using Computed Tomography or Magnetic Resonance Imaging.

Semester Credits: 3**Lecture Hours: 3****Lab/Clinical/Internship Hours: 0****Required Materials****Textbook:**

Sectional Anatomy for Imaging Professionals. Kelley, L & Peterson C. 3rd Edition. (2013). Mosby, an imprint of Elsevier, Inc. ISBN: 9780323082600

Sectional Anatomy for Imaging Professionals, Workbook. Kelley, L & Peterson C. 3rd Edition (2013). Mosby, an imprint of Elsevier, Inc.

Other Required Materials:

Internet Access

Course Outcomes

At the completion of this course, the student will be able to:

- Correctly and with acquired expertise, identify anatomical structures in multiple planes for diagnostic imaging the human body.
- Apply techniques utilized for anatomical visualization
- Identify key physical relationships of structures within anatomical regions.
- Recognize common pathologies related to anatomy presented

Topical Description

I: Introduction to Sectional Anatomy

- Four anatomic planes
- Relative position of specific structures within the body using directional and regional terminology
- Commonly used external landmarks
- Location of commonly used internal landmarks
- Dorsal and ventral cavities of the body
- Four abdominal quadrants
- Nine regions of the abdomen
- Gray scale used in CT and MR imaging

II: Structures of the Brain, Cranium and Facial Bones

- Meninges, production and absorption of CSF
- Components of the ventricular system
- Basal cisterns
- Location and function of the components of the cerebrum, brainstem and cerebellum
- Structures of the limbic system and describe their function.
- Major arteries and venous structures of the cerebellum,
- Arteries that constitute the Circle of Willis and importance
- Function and course of the cranial nerves
- Location and unique structures of each cranial and facial bone
- Structures of the ear and describe their functions
- Location of each paranasal sinus and the meatus into which it drains
- Structures of the osteomeatal unit
- Structures that constitute the globe of the eye.
- Muscles of the eye and describe their functions and locations.

III: Structure of the Spine and Spinal Canal

- Structures of atypical vertebra
- Atypical structures of the atlas, axis, thoracic vertebra, sacrum and coccyx
- Function of the spinal ligaments
- Muscle groups of the spine
- Components of the spinal cord and spinal nerves
- Four plexuses of the spinal cord and list the structures they innervate
- Vasculature of the spine and spinal cord

IV: Structures of the Neck and Thorax

- Three anatomic sections of the pharynx
- Laryngeal
- Function of the esophagus
- Function of the salivary glands
- Location and function of the thyroid gland
- Cervical lymph node regions
- Facial planes and spaces
- Pharyngeal muscles
- Triangles of the neck and identify the muscles that divide them
- Course of the major vessels located within the neck
- Structures that constitute the bony thorax
- Thoracic inlet and outlet
- Function and layers of the pleura
- Structures of the lungs
- Main-stem bronchi and their divisions
- Structures of the mediastinum and describe their anatomic relationships to each other
- Structures of the heart and circulation of blood through the heart
- Great vessels and the distribution of their associated arteries and veins
- Pulmonary arteries and pulmonary veins by function and location
- Coronary arteries and veins
- Muscles involved in respiration by function and location

V: Structures of the Abdomen and Pelvis

- Structures of the abdominal and differentiate among those that are contained within the peritoneum, and those that are contained within the retroperitoneum
- Peritoneal and retroperitoneal spaces
- Lobes, segments, and vasculature of the liver
- Structures of the biliary systems
- Functions and location of the pancreas and spleen
- Structures of the urinary system
- The structures of the stomach and intestines
- Branches of the abdominal aorta and the structures they supply
- Tributaries of the inferior vena cava and the structures they drain
- Muscles of the abdomen and describe their functions
- Structures of the bony pelvis
- Pelvic inlet and outlet
- The perineum

- Function and location of the pelvic muscles
- Pelvic and urogenital diaphragms
- Location of the bladder in relation to the reproductive organs and the course of male and female urethras
- Location and function of the male and female reproductive organs
- Major arteries and veins that are located within the pelvis
- Location of the pelvic lymph nodes

VI: Structures of the Upper and Lower Extremity

- Bony anatomy of the upper and lower extremity
- Components that contribute to the glenoid labrum
- Joint capsules of the shoulder and elbow
- Ligaments and tendons of each upper extremity joint
- Labrum and articular cartilage of the hip
- Ligaments, retinacula, and tendons of the lower extremity joints
- Bursae of the hip and knee
- Meniscus and articular capsule of the knee
- Actions of the muscles, as well as their origin and insertion sites for the upper and lower extremity
- Major arteries and veins of the upper and lower extremity
- Nerves that innervate the upper and lower extremity

Note to Instructors

None