

# NMED-1780: SECTIONAL ANATOMY FOR ADVANCED MOLECULAR IMAGING

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## Cuyahoga Community College

**Viewing: NMED-1780 : Sectional Anatomy for Advanced Molecular Imaging**

**Board of Trustees:**

October 2019

**Academic Term:**

Fall 2020

**Subject Code**

NMED - Nuclear Medicine Technology

**Course Number:**

1780

**Title:**

Sectional Anatomy for Advanced Molecular Imaging

**Catalog Description:**

Study of human anatomy and its appearance in multiple planes. Includes all commonly imaged body systems and areas as well as discernment of abnormal pathology and how to make the associated imaging changes required to adequately demonstrate the patients anatomy and pathology. Covers imaging planes and anatomy imaged by nuclear medicine, computed tomography, and magnetic resonance imaging.

**Credit Hour(s):**

2

**Lecture Hour(s):**

2

## Requisites

**Prerequisite and Corequisite**

NMED-1301 Nuclear Medicine Procedures I; and concurrent enrollment in NMED-1770 Immunology and Pathophysiology for Sectional Imaging; and departmental approval: admission to program.

## Outcomes

**Course Outcome(s):**

Identify normal anatomy and abnormal conditions in multiple planes and make the associated imaging changes required to adequately demonstrate the patient's anatomy and pathology.

**Objective(s):**

1. Identify anatomical structures as seen in multiple orthogonal planes on nuclear medicine, computed tomography, and magnetic resonance images.
2. Describe gross anatomic relationships in the body.
3. Describe anterior-posterior, proximal-distal and lateral-medial relationships of anatomy.

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**Course Outcome(s):**

Identify the appearance of common pathologies found in various imaging protocols of nuclear medicine, computed tomography, and magnetic resonance imaging inclusive of all commonly-imaged body systems.

**Objective(s):**

1. 4. Distinguish normal anatomy from abnormal anatomy across various planes and sections.
  2. 5. Identify changes in anatomical sizes and shapes of structures that can indicate pathology.
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**Methods of Evaluation:**

1. participation
2. worksheets
3. quizzes
4. exams
5. case studies

**Course Content Outline:**

1. The anatomy of the head including muscular, venous, skeletal, nervous structures.
  - a. Bones of the skull and cranium
  - b. The brain
    - i. Regions of the brain
    - ii. The ventricular system
    - iii. Meninges
    - iv. Arterial blood supply
    - v. Venous drainage
    - vi. Cranial nerves
    - vii. The orbital cavity
    - viii. Auditory canal
    - ix. Endocrine system - pituitary gland
      1. Sphenoid bone
      2. Infundibulum
      3. Hypophysis (pituitary gland)
2. The anatomy of the spine including muscular, venous, skeletal, nervous structures
  - a. Vertebral column
  - b. Typical vertebrae components
  - c. Sacrum
  - d. Coccyx
  - e. Intervertebral discs
  - f. Spinal cord
  - g. Spinal plexus
3. The anatomy the neck including soft tissue, muscular, and vasculatures
  - a. Tissue organization
  - b. Viscera of the neck
    - i. Pharynx
    - ii. Rectopharyngeal space
    - iii. Larynx (distinguishing between true and false cords)
    - iv. Esophagus
    - v. Trachea
    - vi. Thyroid glands
    - vii. Salivary glands
  - c. Vascular supply (major branches)
  - d. Musculature of the neck
4. The anatomy of the thorax including muscular, venous, skeletal, nervous structures
  - a. Skeletal anatomy of the thorax
  - b. Thoracic cavity
  - c. Heart
    - i. Superficial features of the heart
    - ii. Chambers and valves
    - iii. Vascular supply and drainage
    - iv. The great vessels of the heart
    - v. Associated thoracic structures
    - vi. Breast
    - vii. Lymphatic system
5. The anatomy of the abdomen including major organs, muscular, venous, nervous structures
  - a. Abdominal regions
  - b. Diaphragm
  - c. Abdominal musculature

- d. Abdominal peritoneum
  - e. Peritoneal cul-de-sacs
  - f. Abdominal vasculature
  - g. Venous drainage of the abdomen
  - h. Hepatic portal system
  - i. Abdominal viscera
  - j. Liver
  - k. Gallbladder
  - l. Esophagus
  - m. Stomach
    - i. Vasculature
    - ii. Divisions
  - n. Small intestine
  - o. Large intestine
  - p. Spleen
  - q. Pancreas
  - r. Kidneys
  - s. Suprarenal gland
6. The anatomy of the pelvis including major organs, muscular, vasculatures, skeletal, nervous structures and innervation
- a. Bony pelvis
  - b. Pelvic musculatur
  - c. Vasculature
  - d. Innervation
  - e. Pelvic viscera
  - f. Gastrointestinal organs
  - g. Urinary organs and system
  - h. Viscera of female pelvis
    - i. Peritoneal folds
    - ii. Ligaments
    - iii. Ovaries
    - iv. Uterus
    - v. Uterine tubes
    - vi. Cervix
    - vii. Vagina
    - viii. Maternal and fetal
  - i. Viscera of the male pelvis
    - i. Scrotum
    - ii. Ductus deferens
    - iii. Spermatic cord
    - iv. Cremaster muscle
    - v. Seminal vesicles
    - vi. Prostate
    - vii. Bulbourethral glands
    - viii. Penis
  - j. External genitalia and related perineum
    - i. Female external genitalia
    - ii. Male external genitalia
7. Upper extremity anatomy including muscular, vasculatures, skeletal, nervous structures and innervation
- a. Shoulder joint
  - b. Upper arm (brachium)
  - c. Elbow joint
  - d. Cubital fossa
  - e. Forearm
  - f. Wrist
  - g. Hand
8. Lower extremity anatomy including muscular, vasculatures, skeletal, nervous structures and innervation
- a. Hip joint
  - b. The thigh

- c. The knee
  - d. The leg
  - e. The ankle
  - f. The foot
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## Resources

Damjanov, Ivan. *Pathology for the Health Professions*. 5th edition. Elsevier Saunders, 2016.

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