Imaging Diagnostics HS987

In the *Imaging Diagnostics CPU*, students explore areas such as x-ray technology, fluroscopy, nuclear medicine, tomography, CT, MRI, mammography, ultrasound, and PET. Students also examine actual radiographs, MRIs, and an ultrasound. Students develop proper safety and communication skills while conducting a simulated x-ray. Careers specifically addressed in the *Imaging Diagnostics CPU* include radiologist, radiologic technician, radiation therapy technologist, nuclear medicine technologist, CT technologist, and sonographer.

Areas Covered

- Overview of the anatomy and physiology of many systems in the human body as they relate to a particular imaging procedure
- Use of a light box to view authentic x-rays pertaining to specific case scenerios
- Proper techniques associated with performing an x-ray and demonstration of this knowledge through use of a simulated x-ray machine
- Exploration of many imaging procedures, including detailed descriptions of the procedures
- Skills and knowledge to aid students in various HOSA competitions

Career Pathway Unit Includes:

Imaging Diagnostics CD and Instructor's Overview Booklet, History of Medical Imaging DVD, Human X-Ray Print Set and Textbook, Illuminator, Imaging Diagnostics Video CDs, Skills Cart™, Lead Apron, Nuclear Energy CD, Principles of Radiographic Imaging Textbook, Principles of Radiographic Positioning Textbook, Thermo-Luminescent Dosimeter Monitoring Clip, X-Ray Simulator Assembly, X-Ray Samples

Imaging Diagnostics Goals & Activities

- Explore and contrast the jobs of a radiographer and a radiologist.
- Explain why the selected career areas are important to the imaging diagnostics field.
- Review the digestive system and its function.
- Review the skeletal system and its function.
- Examine one of the most common radiographs.
- Define “R,” rad, and rem.
- Conduct research on and describe the x-ray tube and how it works.
- Explore uses of the x-ray.
- Describe how a simple x-ray is taken.
- Discover the challenges associated with mobile x-ray.
- View actual x-rays using a light box.
- Define radiation, its many sources, and how to prevent unnecessary exposure.
- Learn ways to limit radiation exposure and monitor dose limits.
- Discover how to perform an x-ray.
- Learn the importance of effective communication as it relates to both stationary and mobile imaging.
- Learn aseptic technique and its importance.
- Identify the steps in performing an x-ray.
- View a simulated x-ray including aseptic technique and effective communication.
- Perform a simulated x-ray.
- Define fluoroscopy.
- Describe an image intensifier and how it works.
- Explore nuclear medicine and the responsibilities of those who work in this area.
- Describe intravenous pyelogram.
- Identify three tests that use barium: barium swallow, barium small bowel enema, and barium enema.
- Define tomography.
- Explore computed tomography and its history.
- Define ECT and SPECT and describe how radiopharmaceuticals appear on these tests.
- Explain PET, how it works, and the clinical implications regarding Parkinson’s disease.
- Explore how PET has been useful in other neurological diseases and in psychiatry.
- Identify MRI advantages and disadvantages.
- Explore how an MRI can be helpful in diagnosing sports injuries.
- Discuss the history of the MRI and learn about its inventors.
- Define mammography.
- Discuss mammography’s history.
- Explain when to have a mammogram, what the risk factors are, and list signs of problems.
- Define two types of mammogram.
- Explain what a lump in the breast is and what it could mean.
- Define ultrasound and learn its uses.
- Explore the ultrasound’s history.
- Discuss occupations relating to ultrasound, certification, and areas of expertise.
- Determine various uses for ultrasound in obstetrics and pregnancy.
- Discover the therapeutic uses of radiation.
- Discuss the two types of radiation therapy.
- Identify side effects of both internal and external radiation therapy.
- Discover the radiation therapy treatment team and their responsibilities.

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