

Courses Description

College: Applied Medical Sciences

Department: Radiography

Couse ID: 110508211 **Description:** Radiographic Processing & Exposure

Full Course Description: a

Couse ID: 110508214 **Description:** Radiobiology

Full Course Description: f

Couse ID: 110508312 **Description:** Image Quality Control

Full Course Description: s

Couse ID: 110508313 **Description:** Radiation Safety and Protection

Full Course Description: d

Couse ID: 110508315 **Description:** Methods in Patient Care

Full Course Description: g

Couse ID: 110508321 **Description:** Imaging Procedure (1)

Full Course Description: h

Couse ID: 110508322 **Description:** Imaging Procedure (2)

Full Course Description: h

Couse ID: 110508325 **Description:** Nuclear Medicine

Full Course Description: z

Couse ID: 110508332 **Description:** Computed Tomography (1)

Full Course Description: c

Couse ID: 110508334 **Description:** Magnetic Resonance Imaging (1)

Full Course Description: b

Couse ID: 110508341 **Description:** Quantitative Analysis of Medical Images

Full Course Description: m

Couse ID: 110508342 **Description:** Digital Imaging

Full Course Description: q

Couse ID: 110508353 **Description:** Research Methods in Medical Imaging

Full Course Description: u

Couse ID: 110508354 **Description:** Diagnostic Ultrasound

Full Course Description: u

Couse ID: 110508355 **Description:** Radiotherapy

Full Course Description: i

Couse ID: 110508356 **Description:** Special Topics in Medical Imaging

Full Course Description: u

Couse ID: 110508357 **Description:** Computer in Medical Imaging

Full Course Description: k

Couse ID: 110508364 **Description:** Molecular Imaging

Full Course Description: j

Couse ID: 110508423 **Description:** Imaging Procedure (3)

Full Course Description: k

Courses Description

College: Applied Medical Sciences

Department: Radiography

Couse ID: 110508424 **Description:** Imaging Procedure (4)

Full Course Description: l

Couse ID: 110508431 **Description:** Cross Sectional Anatomy

Full Course Description: x

Couse ID: 110508433 **Description:** Computed Tomography (2)

Full Course Description: v

Couse ID: 110508435 **Description:** Magnetic Resonance Imaging (2)

Full Course Description: n

Couse ID: 110508443 **Description:** Principles of Diagnostic Radiology

Full Course Description: w

Couse ID: 110508471 **Description:** Internship in Medical Imaging (1)

Full Course Description: t

Couse ID: 110508472 **Description:** Internship in Medical Imaging (2)

Full Course Description: y

Couse ID: 140508111 **Description:** Fundamentals of Medical Imaging

Full Course Description: This course explains the basics of medical imaging and introduces the students to the various medical imaging modalities such as (X-ray machine, CT, MRI, US) and their principle of operations. Furthermore, this course explains the different types of medical radiations used in medical imaging and the mechanism of their production and interaction with the materials

Couse ID: 140508212 **Description:** Radiographic image Processing & Exposure

Full Course Description: This course is concerned with building up the knowledge of planner X-Ray Imaging. The course starts by revising some of radiation physics before it moves to explain the required tools before the X-ray beam hits the film. This includes intensifying screen, beam restrictors, and grid. Radiographic Film is the major tool for displaying the X-Ray radiographic information (which is connected to the human tissue clinical situation). Therefore, the course explains in details the structure of the radiographic film. Then, the course moved to describe how the X-Ray radiation are transformed to silver depositions (i.e. the formation of the latent image). Later, the course concentrates on how the latent image is "processed" to form the visible radiographic shades (i.e. final radiographic film). The "processing" procedures and the necessarily chemical components are explained in details. This covers both the manual and automated "processing". Then, the course explains the main characteristics of the radiographic film such as the optical density, film contrast, film gamma, and the film Latitude. These parameters are of great importance since they determine both "how to use film optimally" and "what are the required imaging factors?". The understanding of these parameters controls the quality of the resulting radiographic film.

Couse ID: 140508213 **Description:** Principles of Radioactivity

Full Course Description: This course aims to study the phenomenon of radioactivity and radioactive decay. It discusses the interactions between charged particles as well as neutrons with matter and identifies the types of radiation and particles resulting from the radioactive decay and their medical uses, and introduces students to the devices of medical imaging that uses these rays and particles such as (Gamma Camera, SPECT, PET, PET- CT). In addition, this course introduces students to the process of radiation detection and explains the different types of detectors (gaseous and scintillation). Finally, the production and medical use of radionuclides will also be explained

Courses Description

College: Applied Medical Sciences

Department: Radiography

Couse ID: 140508221 **Description:** Radiological Imaging Procedures (1)

Full Course Description: Specific skills are required to perform and evaluate radiographic examinations of the chest, abdomen, upper extremities, and lower extremities with emphasis on image quality, patient care, and adaptation to a variety of client conditions

Couse ID: 140508272 **Description:** Radiotherapy

Full Course Description: This course introduces the student to both basic physical principles of radiation therapy and physical aspects of treatment planning using photon beams, electron beams and brachytherapy sources. For the modern clinical radiation therapy, additional information will be discussed such as Intensity Modulated Radiation Therapy and Stereotactic Radio-surgery

Couse ID: 140508273 **Description:** Diagnostic Ultrasound

Full Course Description: This course introduces the student to comprehensive coverage of the physical principles of Diagnostic Ultrasound (US) and its clinical applications, the theoretical foundations necessary for the clinical practice of US scanning and understanding of 3D anatomical images as they related

Couse ID: 140508315 **Description:** Quality Control of Radiological Images

Full Course Description: This course introduces the student to the principles of radiographic techniques which producing the best diagnostic image quality. Therefore, Quality control is the use of diagnostic tools to detect trends that will eventually cause repeated exposures to the patient, and correct them before such unnecessary exposures come about. By definition, then, QC plays a vital role in minimizing patient exposure

Couse ID: 140508316 **Description:** Methods in Patient Care

Full Course Description: This course develops knowledge and skills in basic concepts of patient care. Includes emergency care procedures, vital sign assessment, body mechanics, sterile techniques, intravenous equipment and administration, infection control, patient safety and transfers, communication, and patient education

Couse ID: 140508322 **Description:** Radiological Imaging Procedures (2)

Full Course Description: Studies a variety of radiographic procedures of the skull, sinuses, spines, lumbosacral, sacrum, coccyx, breast mammography, and tomographic demonstration. Independent decision making regarding trauma radiography is also included

Couse ID: 140508323 **Description:** Radiological Imaging Procedures (3)

Full Course Description: Radiographic procedures of the excretory system, reproductive system, and the alimentary canal. This includes patient preparation for imaging and use of contrast media and drugs. In addition this courses explains the different angiographic procedures used to diagnose and treat patients with cardiovascular problems

Couse ID: 140508324 **Description:** Nuclear Medicine

Full Course Description: Nuclear Medicine Imaging (NMI or NM) is a major branch of medical imaging systems. There are three main NMI devices. These are Gamma Camera (Planner NM Imaging), Single Photon Emission Computerized Tomography SPECT, Positron Emission Tomography PET. Basically, these systems are concerned of observing the distribution of a radiopharmaceutical within human. The resulting NM images give clinical information about certain functions of human organs. This matter is not acheivable, or is not easily acheivable by other medical imaging modalities such as CT and MRI. Recently nuclear medicine (NM) has made many major advances in both the radiopharmaceuticals and instrumentation. These advances have led to widespread of many clinical applications of NM imaging that give valuable diagnostic information. This course serves as a review of basic concepts of NM imaging instrumentation (Gamma Camera, SPECT, PET). Also, it provides explanation of the all associated issues related to radio- pharmaceuticals including the process of production, localization, uptake, clearance, and other associated aspects

Courses Description

College: Applied Medical Sciences

Department: Radiography

Couse ID: 140508331 **Description:** Computed Tomography (1)

Full Course Description: This course introduces the students to the basic principles of computed tomography (CT), including the physics and instrumentation related to CT. CT image quality and patient dose are also covered in this course

Couse ID: 140508332 **Description:** Magnetic Resonance Imaging (1)

Full Course Description: This course covers different basic topics such as basic physics of NMR, relaxation phenomena, relaxation time measurement, basic NMR imaging theory and methods, biophysical background of tissue NMR, image contrast manipulation, basic imaging pulse sequences, spatial encoding, k-space, hardware for MRI, quality control and MR safety

Couse ID: 140508341 **Description:** Digital Imaging

Full Course Description: This course forms an introduction into the principles of computed and digital radiography and their applications in the field of medical imaging. The advantages and disadvantages of digital over screen-film radiography will also be covered in this course. Furthermore, this course provides an insight and an understanding of different digital-based imaging modalities such as; digital fluoroscopy, digital mammography, computed tomography and magnetic resonance imaging and their clinical applications. In addition, this course covers the different digital image pre-processing and post-processing techniques used to improve the interpretation of different medical images

Couse ID: 140508342 **Description:** Quantitative Analysis of Medical Images

Full Course Description: Quantitative imaging provides clinicians with more accurate picture of disease state by applying algorithms, that precisely measure various aspects of an abnormality in medical images to allow clinicians to extract quantitative information from images in an effort to help identify disease earlier, predict prognosis, and assess treatment efficacy as well. So, this course is planned to offer the student with the various image processing and analysis methods commonly used in medical imaging applications such as image smoothing, spatial co-registration, normalization, segmentation, and fusion. Furthermore, different quantitative analysis methods such as region of interest, volume of interest, histogram-based analysis, voxel-based morphometry will also be covered in this course

Couse ID: 140508351 **Description:** Medical Imaging Internship (1)

Full Course Description: In this training course, the student will spend 12 hours per week at different attached hospitals and medical centers and during which the student will have the chance to practice the skills gained while studying the radiological imaging procedures (1 and 2). These include imaging the respiratory system, abdomen, pelvis, upper and lower extremities, skull, neck, sinuses, vertebral column.

Couse ID: 140508371 **Description:** Special Topics in Medical Imaging

Full Course Description: Advanced study in one of the areas of Medical Imaging chosen at the beginning of the semester to expand the knowledge of students in this area of Medical Imaging and to train them to use the library as well as electronic resources properly

Couse ID: 140508374 **Description:** Research Methods in Medical Imaging

Full Course Description: This course aims at introducing the Medical Imaging students into the process of research and inquiry. This includes four major steps namely; Critical Thinking, Problem Solving, Analysis and Dissemination. Furthermore, students will be introduced to the processes of work writing up and publishing, citing and referencing systems

Courses Description

College: Applied Medical Sciences

Department: Radiography

Couse ID: 140508376 **Description:** Molecular Imaging

Full Course Description: This course provides a comprehensive overview of the key concepts in molecular imaging. The course goal is to introduce the imaging methods and concepts that are used in molecular structure and dynamics analysis. Molecular imaging differs from traditional imaging in that probes, known as biomarkers, are used to help image particular targets or pathways. This course will introduce the attendees to the fundamentals of molecular imaging: biological mechanisms and molecular probes, imaging technologies and their applications, with great focus on SPECT, PET, and MRI

Couse ID: 140508377 **Description:** Seminar in Medical Imaging

Full Course Description: During this course, students will learn how to search for a particular topic in medical imaging and write a detailed report about it in addition to helping students preparing and presenting their work orally

Couse ID: 140508433 **Description:** Cross Sectional Anatomy

Full Course Description: This course allows the student to identify different structures of human body on both computed tomography (CT) and magnetic resonance (MR) images in different planes. This course also offers the student with the opportunity to practice viewing the anatomical structures and organs in both two dimensional (2D) and three dimensional (3D) planes in relative to some internal and external landmarks

Couse ID: 140508434 **Description:** Computed Tomography (2)

Full Course Description: This course aims at introducing the students to the clinical use of computed tomography. In addition, different CT imaging protocols, factors and modifications will be covered in this course. One important aim of this course is to understand how to deal with patients before, during and after CT examination.

Couse ID: 140508435 **Description:** Magnetic Resonance Imaging (2)

Full Course Description: This course covers advanced and clinical MRI topics such as fast imaging techniques (fast gradient echo, fast spin echo, Echo planar imaging EPI, parallel imaging), tissue suppression techniques, MR artifacts, MR contrast agents, chemical shift imaging, magnetization transfer imaging, diffusion imaging, functional MRI, flow imaging, MR angiography, cardiac gated imaging, clinical imaging protocols, and in vivo NMR spectroscopy

Couse ID: 140508443 **Description:** Principles of Radiological Diagnosis

Full Course Description: Understanding the basic principles of pathology is an essential part of the radiologic technologist's training. Knowing how disease processes work. Recognizing the radiographic appearance of specific disease can aid the technologist in selecting proper modalities and determining the proper imaging technique

Couse ID: 140508452 **Description:** Medical Imaging Internship (2)

Full Course Description: In this training course, students will spend 18 hours per week at different attached hospitals and medical centers and during which students will have the chance to practice the skills gained while studing the radiological imaging procedures (1, 2, 3), Magnetic Resonance Imaging (MRI) and Computed Tomography (CT). □

- • Radiological Imaging Procedures (1,2,3): 2 credit hours (6 practical hours)□
- Computed Tomography (CT): 2 credit hours (6 practical hours)□
- Magnetic Resonance Imaging (MRI): 2 credit hours (6 practical hours)□

Courses Description

College: Applied Medical Sciences
Department: Radiography

Couse ID: 140508453 **Description:** Medical Imaging Internship (3)

Full Course Description: In this training course, students will spend 18 hours per week at different attached hospitals and medical centers and during which students will have the chance to practice the skills gained while studing the radiological imaging procedures (1, 2, 3), Magnetic Resonance Imaging (MRI) and Computed Tomography (CT). □

- Radiological Imaging Procedures (1,2,3): 2 credit hours (6 practical hours)□
- Computed Tomography (CT): 2 credit hours (6 practical hours)□
- Magnetic Resonance Imaging (MRI): 2 credit hours (6 practical hours)□

Couse ID: 1905081214 **Description:** Radiobiology

Full Course Description:

Couse ID: 1905081215 **Description:** Radiation Protection

Full Course Description:

Couse ID: 1905081351 **Description:** Medical Imaging Internship (1)

Full Course Description: