

- The below mentioned LO's belongs to MIT curriculum

Introduction to Programme:

The Medical Imaging Technology course is a four-year undergraduate program designed to provide students with foundational knowledge in radiological investigations. The focus is on imparting essential technical skills for the operation and maintenance of diverse imaging equipment, including X-ray machines, ultrasound/Echocardiography devices, magnetic resonance imaging (MRI) scanners, computed tomography (CT) scanners, nuclear medicine, and specialized Interventional Radiology/cardiac equipment. In response to the expanding healthcare sector in Pakistan, there is a demand for proficient medical imaging technologists capable of operating and maintaining imaging equipment. These professionals play a vital role in supporting radiologists and physicians in image interpretation, ensuring patient safety during imaging procedures, and contributing significantly to the diagnosis, treatment, and monitoring of various medical conditions.

GENERAL LEARNING OUTCOMES

Medical Imaging Technology education and training should enable the student to:

- Develop accuracy and meticulousness to attain high levels of ethics and technical proficiency.
- Assess the technical and non-technical skills in a standardized and reproducible environment.
- Strengthen decision-making power and exercise appropriate judgment skills, to be applied especially during crisis.
- Develop good leadership, problem-solving, and administrative skills.
- Develop and analyze innovative strategies for effective communication with the patients and the healthcare personnel.
- Demonstrate interdisciplinary team building strategies for effective co-ordination between various Allied Health Disciplines.
- Demonstrate understanding of the basic concepts of professional behavior and legal implications of the work environment.
- Demonstrate the knowledge of his / her role in the health care delivery system.
- Establish and maintain continuing education as a function of growth and maintenance of professional competence.

SPECIFIC LEARNING OUTCOMES

Following competencies will be expected from a student completing 4 years degree course in Medical Imaging Technology. The student should be proficient to:

- Provide quality patient care in routine as well as advanced imaging procedures
- Use digital imaging and information technology equipment competently, through the application of the principles and theories of its operation
- Evaluate performance characteristics of equipment
- Implement an effective radiation protection program
- Apply the knowledge of human sectional anatomy to related clinical procedures
- Apply clinical imaging protocols to specialized imaging procedures
- Apply the principles of management, organizational behavior, supervision, budgeting, human resource management, and labor relations in a medical imaging environment
- Enhance human interaction and performance in the clinical environment by integrating liberal education principles

The MIT is the expert in integrating seven areas of key importance in the imaging departments.

The seven areas include patient care, use of technology, optimization of dose, clinical responsibility, organization, quality assurance and education and training

The student should be proficient to:

Competency statements:

1. Patient Care

- a) Perform proper identification of the patient
- b) Ensure that the patient gives or has given informed consent having first given the patient a clear explanation of the procedure to ensure his cooperation.
- c) Meet ethical/moral considerations
- d) Ensure that no previously performed imaging procedure has already provided the information requested.
- e) Ensure that a relevant clinical history has been obtained
- f) Ensure that no concurrent treatment or investigation will prevent a good result
- g) Ensure that any preparatory instructions, pre-medications or contrast media have been administered correctly
- h) Ensure that an appropriate check regarding pregnancy has been performed and that appropriate action has been taken
- i) Consider the radiation protection status of the patient
- j) Perform appropriate after-care

- k) Use appropriate facilities and methods to prevent cross infection with particular emphasis on precaution standards for blood born pathogens, specifically HIV and hepatitis.
- l) Evaluate the patient's condition prior to the examination in order to make judgment as to the best method to use.
- m) Initiate basic life-support methods if necessary.
- n) React appropriately to other emergency situations
- o) Give intravenous injections for the purpose of imaging provided that the appropriate training and authorization has been give.

2. Use of Imaging Technology

- a) Make a judgment as to the purpose of the request and take the correct action.
- b) Position the patient, source of radiation, image recording device and any ancillary equipment such that the final image is optimum.
- c) Make a judgment as to necessary adaptations to departmental protocols and take appropriate action.
- d) Use the equipment safely and correctly
- e) Ensure that any error in the final image is not due to incorrect usage of equipment.
- f) Select suitable combinations of exposure factors and image recording materials to produce optimum images allowing for the patient's conditions.
- g) Maintain and control all the steps involved in the production and storage of a permanent of visible image.
- h) Assess the resultant image for suitability for its purpose.

Where digital imaging is involved, in addition to the previously stated elements, the

MRT must be competent to:

- i) Apply a detailed knowledge of anatomy in different sectional planes in order to be able to correlate the position of the patient with the require three dimensional information.
- j) Select programmes.
- k) Give advice as to the likely quality of the image using the parameters selected e.g. use of compensating filters, timing of injection, selection of exposure factors etc.
- l) Record, adapt and reconstruct data to obtain optimum image quality.
- m) Store and retrieve information.
- n) Assess the resultant images for suitability for interpretation and diagnosis.

3. Optimization of dose

- a) Select and manipulate the exposure factors and image recording materials such that the dose to the patient is minimized whilst giving the optimum image.
- b) Ensure that all equipment to be used is fully fit for its purpose.
- c) Use all equipment and methods in order to ensure minimization of dose to patient, staff and public and to ensure that no person receives unnecessary irradiation.
- d) Ensure that any protocols relating to the imaging of patients of childbearing capability are applied.
- e) Fulfill any requirements for the recording of dose.
- f) Take appropriate action in radiological emergency situations.

4. Clinical Responsibility

- a) Be professionally accountable for his actions.
- b) Make judgments as to his professional limitations and take appropriate action.
- c) Maintain confidentiality of information.

5. Organization

- a) Efficiently organize the performance of an individual examination.
- b) Efficiently organize work within the area for which he is responsible.
- c) Ensure compliance with all applicable legislation relating to his work.

6. Quality Assurance

The MIT must be competent in assessing the quality of his work.

7. Education and Training

The MIT must be competent to share his knowledge and clinical experience with the students of MIT program in a professional manner.