

American University of Beirut
Faculty of Health Sciences
Medical Imaging Sciences
DGRG 230
(Clinical Practicum II)
Fall Semester

Name Miss Hanane Merhi
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Office Hours:

Meeting

Location:

Department of
Diagnostic
Radiology

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Meeting Time:

Extension

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COURSE DESCRIPTION:

Clinical training in:

- General Radiography
- Mobile Radiography
- Emergency Radiography
- General Fluoroscopy
- Breast Imaging
- Operating Theatre

Course Objectives:

- **At the end of their clinical training student radiographers will develop the below listed skills and competencies:**
 - General / Mobile / Emergency Radiography
 - Correlate clinical history to the requested examination
 - Determine the need for use of bucky
 - Utilize appropriate accessory items
 - Give proper patient instructions
 - Position the anatomical part for radiographic projections and procedures
 - Apply the principles of patient safety during all aspects of radiographic examination

- Verify correct image identification
 - Check for correct use and proper placement of marker
 - Determine if correct CR (computed radiography) cassette size and orientation were used
 - Recognize image artifacts
 - Identify anatomy and patient position on the image
 - Evaluate images for technical quality
 - Verify that the required structures are demonstrated
- General Fluoroscopy
- Demonstrate professional behavior and responsibility
 - Read and understand medical terms, and abbreviations on client request.
 - Interpret information on the request.
 - Identify correct client before starting the procedure.
 - Introduce yourself to the client before starting the procedure
 - Obtain client history
 - Provide accurate explanations and instructions at an appropriate time and at a level the client can understand
 - Provide clear instructions to the patient for proper preparation required for each procedure
 - Explain the need for using contrast media (whenever applicable) and how it is eliminated from client's system.
 - Provide clear instructions to the client for proper positioning protocol
 - Inform the client that the dim light will be used during fluoroscopy
 - Assist the client before, during and after procedure
 - Respect the client's right to privacy and confidentiality
 - Deliver care and services without bias, irrelevant of personal attributes, nature of the disease, sex, race, creed, religion, or socioeconomic status
 - Assure client was properly prepared for procedure.
 - Observe and evaluate client's condition throughout the course of the exam
 - Apply ALARA principle to enforce radiation protection
 - Describe how x – rays are produced
 - Identify the factors that affect beam attenuation
 - Learn appropriate control panel operations
 - Know the impact of each selected technique factor (kVp, mA, mAs, SID, focal spot size) on the produced radiograph (density and contrast)
 - Know the difference between different image detectors (CR, DR, Image Intensifier, Flat panel)
 - Comprehend the use of grids and their effect on exposure and image
 - Comprehend the air gap technique and its use
 - Comprehend the concept and use of the anode heel effect

- Comprehend the use of compression imaging and its role in technique selection
- Learn the manipulation of the imaging equipment
- Know how changing generator output, kVp, mA and filtration affects the x – ray emission spectrum
- Know the Inverse square law and its effect on exposure factors
- Know the concept behind automatic exposure control (AEC)
- Understand the concept behind radiographic images, spot images, last image hold and continuous / pulsed fluoroscopy
- Set up the room utilizing proper aseptic or sterile technique as needed.
- Prepare all equipment and supplies needed for each fluoroscopic procedure.
- Discuss reason for using all equipment and supplies needed for each fluoroscopic procedure.
- Know proper contrast and administration route needed for each procedure.
- Prepare the required type and amount of contrast media appropriate to the examination using aseptic technique.
- Identify the client on the work list.
- Check appropriate preset parameters:
- Know how to manipulate the equipment as required
- Select the appropriate image receptor required.
- Understand the impact of the selected exposure factors
- Apply exposure technique modifications for the following considerations:
- Know standard positioning terms.
- Determine correct sequence of projections.
- Identify the location of structures using directional and orientation terms.
- Apply appropriate client immobilization devices when needed
- Apply the appropriate ALARA principles relevant to the procedure (shielding, distance, time)
- Perform radiographic imaging procedures under the appropriate level of supervision
- Name and identify, by palpation, the significant bony prominences / depressions and significant positioning landmarks
- Demonstrate correct body and part positioning for routine projections and common special projections
- Correctly position the patient for each projection
- Align and center the requested anatomy for each projection
- Center the central ray based on the procedure performed
- Identify how the degree of central ray angulation needs to be adjusted with different projections.
- Apply appropriate collimation

- Observe the documentation of radiographers' notes for each client on the RIS (radiology information system)
- Observe the release of images to PACS (picture archiving and communication system)
- Inform the patient if / when the procedure is complete
- Know AUBMC's standard procedure for cleanup and disposal of body fluids
- Know how to mark and annotate images.
- Visualize required demographic information on the fluoroscopic image
- Identify the presence of required anatomy for the procedure / view in the fluoroscopic image
- Assess fluoroscopic images for soft tissue, bony trabeculation and presence of artifacts
- Recognize how using different exposure factors, anode heel effect, grid , focal spot size, SID, and air gap technique, affect visualization of required anatomy
- Indicate if purpose of fluoroscopic procedure was fulfilled and no more images are required
- Identify different projections taken for each exam.
- Assess fluoroscopic images for appropriate patient identification, proper collimation and correct use of marker
- Critique fluoroscopic images for required anatomical structures, centering and alignment.
- Distinguish the presence of preventable artifacts
- Evaluate if penetration was sufficient to visualize soft tissue, bony trabeculation and cortical outlines on fluoroscopic images
- Evaluate if fluoroscopic contrast was adequate to demonstrate subject contrast
- Assess fluoroscopic images for optimal brightness
- Explain how beam restriction and use of grids affect image quality
- Explain how changing generator out-put kVp, mA, and time affect image quality
- Identify how using different exposure factors, anode heel effect, grid , focal spot size, SID, and air gap technique, affect visualization of required anatomy
- Recognize and list factors that affect recorded detail and sharpness
- Identify factors that could contribute to quantum noise artifact
- Recognize pathologies on images and modify views accordingly
- Indicate if the purpose of the fluoroscopic procedure was fulfilled and no more images are required.
- Repeat images if needed under supervision

- Breast Imaging
 - Identify correct client before starting the procedure
 - Introduce yourself to the client before starting the procedure
 - Read and understand medical terms, and abbreviations on client request
 - Interpret information on the request
 - Collect pertinent data about the client and the procedure
 - Obtain client history filling the questionnaire form and correlate patient history to the exam
 - Describe how x – rays are produced
 - Identify the factors that affect beam attenuation
 - Learn appropriate control panel operations
 - Know the impact of each selected technique factor (kVp, mA, mAs, SID, focal spot size) on the produced radiograph (density and contrast)
 - Comprehend the use of grids and their effect on exposure and image
 - Comprehend the air gap technique and its use
 - Comprehend the concept and use of the anode heel effect
 - Comprehend the use of compression imaging and its role in technique selection
 - Learn the manipulation of the imaging equipment
 - Know how changing generator output, kVp, mA and filtration affects the x – ray emission spectrum
 - Know the Inverse square law and its effect on exposure factors
 - Know the concept behind automatic exposure control (AEC)
 - Know the required compression pad size and placement for each procedure
 - Select correct image receptor/grid combination.
 - Learn how the mammographic unit is manipulated
 - Know standard positioning terms.
 - Determine correct sequence of projections.
 - Identify the location of structures using directional and orientation terms.
 - Assist the radiographer in positioning the client
 - Visualize required demographic information on the radiographic image
 - locate the presence of correct marker on the radiographic image
 - Assure the presence of required anatomy with correct positioning each projection /identify different structures.

- Operating Theatre
 - Apply the aseptic technique
 - Observe the draping of the imaging equipment as required for each surgical case.
 - Assist and communicate with staff members throughout the examination

- Identify correct patient, obtain patient history and preparation instructions before the procedure
- Ensure that all obscuring objects are removed
- Observe the application of ALARA
- Demonstrate proper assembly and disassembly of the mobile C-arm image intensifier and image monitor
- Understand the mechanics and functions of C-arm.
- Learn the proper technique for fluoroscopy and/or spot views to produce quality diagnostic images with lowest exposure possible.
- Identify appropriate anatomy and patient position on the image
- Assess radiographic images for appropriate patient identification, proper collimation and correct

Credits Allocated: 4

Prerequisites: DGRG 220

Assignments: Case presentations and assignment

Student Assessment / Basis of Grade determination

Grades for this course will be based on the following criteria:

Case presentations 15%
Assignment 5%
Assessments 80%

COURSE SYLLABUS

Author (s) of Syllabus and resume (s)

- Hanane Merhi (resume attached)

COURSE POLICY

1. Attendance:

- Clinical rotations for every DGRG course are assigned by the clinical tutors
- Students are not allowed to change rotations

- During clinical training the students are not allowed to leave their rotation without informing the radiographer in charge of the rotation or the clinical tutor
 - Clinical training hours are set with the scheduling of the DGRG course
 - To pass a DGRG course, students are requested to complete the total hours of clinical training required by the course
 - Upon reporting to clinical training, the student should document his / her attendance with the clinical tutor
 - If a student could not attend the required clinical training, he / she will be asked to compensate for the missing clinical hour (s) on a week - end
2. ***Withdrawal date:*** Please observe withdrawal dates set by the Registrar's Office.
 3. ***Academic integrity:*** Any act of cheating or plagiarism is a violation of academic integrity and will not be tolerated. Kindly refer to student handbook or refer to AUB Policies and Procedures on academic integrity. <http://pmp.aub.edu.lb/university/handbook/158010044.html>.
 4. ***E-mail communication:*** Students will be e – mailed on regular basis throughout the semester.
 5. ***Special needs:*** 'AUB strives to make learning experiences as accessible as possible. If you anticipate or experience academic barriers due to a disability (including mental health, chronic or temporary medical conditions), please inform me immediately so that we can privately discuss options. In order to help establish reasonable accommodations and facilitate a smooth accommodations process, you are encouraged to contact the Accessible Education Office: accessibility@aub.edu.lb; +961-1-350000, x3246; West Hall, 314'.