

MEDICAL PHYSICS UNIT

Laboratory of Diagnostic Medical Imaging: MDPH608 (2 credits)

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Pre-requisite: The Physics of Diagnostic Radiology MDPH614

Evaluation: 35% Laboratory reports
 20% Answers to the quiz questions
 45% Final Examination

Lab Reports: Each Report is to be submitted prior to the next laboratory, is to be organized as follows:

- 1- Title
- 2- Object
- 3- Theory: **brief outline**
- 4- Methods: equipment, phantoms, dosimeters, setups, etc.
- 5- Results: measured data, graphs, calculations, error analysis, etc.
- 6- Conclusions
- 7- Answers to the quiz questions and evaluate the fetal dose if is asked.

General Description:

This laboratory course takes place in the hospital department of medical diagnostic imaging and is designed to give the student a working knowledge of the performance parameters of the diagnostic imaging equipment. Laboratory classes will offer the student the practical experience of image quality control, on selected imaging equipment currently used in diagnostic medicine together with practical applications of the concepts studied in 563-614B and 563-615A. Additionally the students will learn to handle all the measuring devices and phantoms used in medical imaging. There are also included radiology patient dose calculations for different type of applications.

Most references for the labs are available in handouts.

List of Laboratories:

- 1 - X-ray generator–tube assembly evaluation and measurement of X-ray tube focal spot size and system limiting spatial resolution
- 2 - Evaluation of automatic exposure control (Photo-timing systems).
- 3 - Quality control of a flat panel digital detector.
- 4 - Evaluation of fluoroscopic system.
- 5 - Evaluation of a Full Field Digital Mammography unit and monitor calibration and Quality Assurance
- 6 - Basic quality control of an ultrasound scanner.
- 7 - Evaluation of image performance of a computed tomographic scanner.
- 8 - MRI QA test.