



**The Hashemite University
Faculty of Allied Health Sciences
Department of Medical Imaging
Course Syllabus**

Course information	
Course Title	Digital Imaging
Course Code	110508342
Prerequisites	110508211
Credit Hours	3
Course Description	
<p>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.</p>	
Course Objectives	
By the end of this course, student is expected to:	
Be able to understand the physical principles of digital imaging acquisition, processing, display, storage and communication.	
Be able to understand the differences between screen-film and digital radiography.	
Be able to understand the basic principles of image processing techniques.	
Be able to understand the different types of digital-based imaging modalities	
Recommended Textbook	
Title	Digital Radiography: An introduction
Author	Euclid Seeram
Publisher	Delmar, Cengage Learning
Year	2011
Edition	First
Book website	http://www.cengagebrain.co.uk/shop/search/9781401889999
Other References	
Title	digital radiography and PACS
Author	Christi Carter, Beth Veale
Publisher	Mosby/Elsevier
Year	2010
Edition	First
Course Contents	
<ul style="list-style-type: none"> ❖ Introduction ❖ Digital image processing concepts ❖ Computed Radiography ❖ Digital Radiography (Indirect and direct DR) ❖ Digital Fluoroscopy ❖ Digital Mammography ❖ Computed Tomography ❖ Magnetic Resonance Imaging ❖ Image post-processing and analysis 	
Assessment	
First Exam	20%
Second Exam	20%
In course assessment	10%
Final Exam	50%

Learn about Digital Radiography, how it is a solution to Conventional radiography Testing and what are Different Types of Digital Radiography. Introduction to Radiography Testing. Several major disadvantages of the conventional film-based radiography include the following: Low efficiency leading to longer exposure times. The digital image radiograph obtained can be directly viewed on a workstation. The workstation needs to be a high-speed computer so that it can process the data quickly using the specific software. Moreover, the monitor should be of a high resolution of 3.5 megapixels or above. Start studying digital radiography an introduction. Learn vocabulary, terms and more with flashcards, games and other study tools. Collects x-rays with electronic detectors that convert the x-ray to analog signals that is then converted into digital data by an ADC. what happens during the computer data processing component? ADC sends digital data to a computer for processing and image production. What happens during the image display and post-processing component? Digital image converted back into analog signal by DAC to be displayed on a monitor where image can be manipulated. what are some means of storing digital images? Magnetic tapes, disks and laser optical disks. Digital radiography is a form of radiography that uses x-ray sensitive plates to directly capture data during the patient examination, immediately transferring it to a computer system without the use of an intermediate cassette. Advantages include time efficiency through bypassing chemical processing and the ability to digitally transfer and enhance images. Also, less radiation can be used to produce an image of similar contrast to conventional radiography. Digital radiography, also known as direct digital radiography, uses x-ray sensitive plates that directly capture data during the patient examination, immediately transferring it to a computer system without the use of an intermediate cassette as is the case with CR. Commonly referred to as plates, these flat panel detectors use a combination of amorphous silicon detectors with cesium or gadolinium scintillators that convert X-ray to light which is ultimately translated by thin film transistors into digital data (Fig. 2-38). This technology is significantly more expensive than CR technology, but While digital radiography offers definite advantages, it might not be the most appropriate choice at this time for many clinical facilities because of cost and other operational considerations such required equipment or professional skills of the staff. Frequently asked questions by the health professionals. Do I need a darkroom when I buy a digital X-ray system? Do I have to throw away my old X-ray equipment when I move to digital imaging? Do I have to be a computer expert to use digital imaging? Do I need to have special training to interpret digital X-rays? The salesman says CR is