Syllabus*: Radiographic Film Processing and Exposure

140508212 First Semester 2022- /2023-

COURSE INFORMATION	
Course Name: Radiographic Film Processing and Exposure **Semester:** first **Department:** Department of Medical Imaging **Faculty:**	**Course Code:** 140508212 **Section:** **Core Curriculum**:
Day(s) and Time(s): Wednesday: 9:00-11:00 **Classroom:** 203	**Credit Hours:** 3 **Prerequisites**: None

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.

DELIVERY METHODS

The course will be delivered through a combination of active learning strategies. These will include:

- PowerPoint lectures and active online classroom based discussion
- Relevant films and documentaries
- Video lectures
- E-learning resources: e-reading assignments and practice quizzes through Model and Microsoft Team

FACULTY INFORMATION	
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Academic Title:	**Lecturer**
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Office Hours:	**Tuesday** 10:00-11:00 **Monday** 9:00-11:00 **Wednesday** 8:00-9:00 *Please send an e-mail (manary@hu.edu.jo) to meet at any other time.*

REFERENCES AND LEARNING RESOURCES

Required Textbook: List book or state: There is no required textbook for purchase. All compulsory weekly readings are available electronically on Model.

STUDENT LEARNING OUTCOMES MATRIX*

Core Curriculum Learning Outcomes	Program Learning Outcomes	Course Objectives	Course Student Learning Outcomes	Assessment Method
Think critically and creatively in a variety of methods in order to make decisions and solve problems.	KP1: Develop an understanding of human anatomy and physiology as it relates to health and disease and acquire competency in medical terminology, documentation KP2: Understand the principles and physics of medical imaging technologies such as general X-ray, CT, MRI, ultrasound, fluoroscopy, nuclear medicine, dental radiography, and mammography and relate medical research KP3: Develop and implement protocols for medical imaging procedures, including patient positioning, patient care, proper exposure factor selection, appropriate radiation protection measures, demonstrating technical competence, and the use of contrast agents SP1: Demonstrate depth of knowledge and integrate it of the basic scientific principles of all medical imaging technologies for the implementation of various protocols and techniques and	Having the knowledge and skills utilized in handling x-ray machines	Demonstrate the knowledge and skills utilized in x-ray machines.	• Exams
Communicate competently with others using oral and written English skills		Understanding the types of the radiation .	Demonstrate an understanding the interactions of the radiation with the matter.	• Exams
Use videos and images to understand how to produce the radiation .		Demonstrate the knowledge and skills related to the principles of body mechanics, safe patient transfer, and patient restraint.	Demonstrate the correct technique for using different factors to produce good diagnostic image.	• Exams
Use modern litterateur about the new techniques of radiation technique.		Demonstrate an understanding of the considerations necessary when performing radiographic procedures on patients with acute and special conditions	Demonstrate the ability to evaluate and manage the physical needs of the patient.	• Exams
Think creatively to solve the problems and response correctly for the emergency situations		Assist safely with local and systemic administration radiation.	Demonstrate an understanding of basic medical emergencies including recognizing signs and symptoms and appropriate response	• Exams

	to conduct scientific research in this field SP2: Use creativity, critical thinking, analysis, and research skills to modify standard procedures to adapt to new circumstances, difficult cases, or unusual situations while maintaining appropriate medical imaging quality. SP3: Evaluate and criticize all types of medical images CP1: Access, evaluate, and provide medical imaging requirements CP2: Recognizing the need to learn from professional learning, managing learning in the field of medical imaging in an integrated manner, and acquiring continuous learning skills CP3: Demonstrate professional identity and responsibility with patients, colleagues, employers, and society, with ethical and professional behaviors and attitudes in the practice of health care. CP4: Produces high quality, diagnosable medical images by applying positioning skills, selecting technical parameters, and using radiation protection.			

ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their Instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual's needs.

Special Needs Section:
Tel:
Location:
Email:

COURSE REGULATIONS

Participation

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

Late or Missed Assignments

In all cases of assessment, students who fails to attend an exam, class project or deliver a presentation on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a fail grade for this part of the assessment.

- Submitting a term paper on time is a key part of the assessment process. Students who fail to submit their work by the deadline specified will automatically receive a 10% penalty. Assignments handed in more than 24 hours late will receive a further 10% penalty. Each subsequent 24 hours will result in a further 10% penalty.
- In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with University regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

Student Complaints Policy

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

COURSE ASSESSMENT

Course Calendar and Assessment

Students will be graded through the following means of assessment and their final grade will be calculated from the forms of assessment as listed below with their grade weighting taken into account. The criteria for grading are listed at the end of the syllabus

Assessment	Grade Weighting	Deadline Assessment
First Exam	25%	
Second Exam	25%	
Final Exam	50%	Add date/time

Description of Exams

Test questions will predominately come from material presented in the lectures. Semester exams will be conducted during the regularly scheduled lecture period. Exam will consist of a combination of multiple choice, short answer, match, true and false and/or descriptive questions.

Homework: Will be given for each chapter, while the chapter in progress you are supposed to work on them continuously and submit in next lecture when I finish the chapter.

You are also expected to work on in-chapter examples, self-tests and representative number of end of chapter problems. The answers of self-tests and end of chapter exercises are given at the end of the book.

Quizzes: Unannounced quizzes will be given during or/and at the end of each chapter based upon the previous lectures. It will enforce that you come prepared to the class.

No make-up exams, homework or quizzes will be given. Only documented absences will be considered as per HU guidelines.

Grades are not negotiable and are awarded according to the following criteria*:

Letter Grade	Description	Grade Points
A+	Excellent	4.00
A		3.75
A-		3.50
B+	Very Good	3.25
B		3.00
B-		2.75
C+	Good	2.50
C		2.25
C-		2.00
D+	Pass	1.75
D	Pass	1.50
F	Fail	0.00
I	Incomplete	-

WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION

"Lecture hours and weeks are approximate and may change as needed"

Note: For patient care sections with 2 lecture periods per week (S/T), one lecture period covers 1 lecture hour (60 minutes). The course content specifies the sections in chapters 1-10 of the textbook that will be included in quizzes, homework and exams.

Chapter 1	***X-ray production***	**Week 1-2**	**6 lecture hours**
1.1	**The classical X-ray tube.**		
1.2	**modern X-ray tube**		
1.3	**contrast of the image**		
1.4	***noise and dose***		
Chapter 2	***Interactions of Radiation With Matter***	**Week 3-6**	**8 lecture hours**
2. 1	**Ionizing radiation**		
2. 2	**A -Basic Concepts Of Interaction of photons with matter**		
2. 3	**Attenuation Of An X-Ray Photon**		
2. 4	**The Three main Interactions Of X and Gamma Rays With Matter**		
2.5	**Interactions Of Particulate Radiation With Matter**		
Chapter 3	***Radiographic film***	**Week 7-10**	**8 lecture hours**
3. 1	**Introduction**		
3. 2	**Intensifying Screens & Film**		
3. 3	**Film Construction**		
3. 4	**Formation of Latent Image**		
3. 5	**Types of X-ray Film**		
3.6	**Special Film Types**		
3.7	**Handling and Storage of Radiographic Film**		
3.8	**film processing**		
Chapter 4	***Digital Radiography***	**Week 10-13**	**10 lecture hours**
4. 1	**Introduction**		
4. 2	**Physical Principles of Digital Radiography**		
4. 3	**Computed Radiography**		
4. 4	**Direct Radiography**		
4. 5	**Image Processing**		
4. 7	***Aspects of Image Quality***		
4.8	**Radiation Exposure**		

Review	***Week 15***
University Exams	***Week 16***