



Jordan University of Science and Technology
Faculty of Applied Medical Sciences
Radiologic Technology Department

RA475 Nuclear Medicine And Radiation Therapy

First Semester 2023-2024

Course Catalog

3 Credit Hours. The course covers the basic nuclear medicine physics, interaction of radiation with matter, radiation detection, principles of gamma camera (structure, performance and quality control), radiopharmaceuticals, nuclear image acquisition and processing, imaging protocols, principles of SPECT and PET. It introduces the students to the principles of nuclear physics and nuclear medicine, the methods of preparation of radiopharmaceuticles in accurate dose. The course also discusses the main imaging procedures and protocols used in clinical practice.

Text Book

Title	Nuclear Medicine Physics: The Basics
Author(s)	Ramesh Chandra
Edition	7th Edition
Short Name	Basics of Nuclear Medicine
Other Information	

Instructor

Name	Dr. Maram Alakhras
Office Location	-
Office Hours	Sun : 12:30 - 14:00 Mon : 11:00 - 12:30 Wed : 11:00 - 12:30 Thu : 09:00 - 10:30
Email	mmalakhras@just.edu.jo

Class Schedule & Room

Section 1:

Lecture Time: Mon, Wed : 08:30 - 10:00

Room: M4202

Teaching Assistant

Rasha Elshayib(Section 1)

Prerequisites

Line Number	Course Name	Prerequisite Type
142111	RA211 Physics Of Radiology	Prerequisite / Study
143360	RA336 Radiographic Cross Sectional Anatomy Lab	Prerequisite / Study

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	The atom and basic nuclear physics	From Basics of Nuclear Medicine
Week 2	Isotopes production	From Basics of Nuclear Medicine
Week 3	Radioactive Decay	From Basics of Nuclear Medicine
Week 4	Interaction of radiation with matter	From Basics of Nuclear Medicine
Week 5	Instrumentations- Gas detectors	From Basics of Nuclear Medicine
Week 6	Instrumentation- Gamma camera	From Basics of Nuclear Medicine
Week 7	Performance of gamma camera	From Basics of Nuclear Medicine
Week 8	Types and preparation of Radiopharmaceuticals	From Basics of Nuclear Medicine
Week 9	Planar Image acquisition	From Basics of Nuclear Medicine
Week 10	Principles of SPECT Imaging	From Basics of Nuclear Medicine
Week 11	Principles of PET scanning	From Basics of Nuclear Medicine
Week 12	Imaging protocols_bone scan and thyroid scan	From Basics of Nuclear Medicine
Week 13	Imaging protocols_Renal scan and GI system	From Basics of Nuclear Medicine
Week 14	Imaging protocols_Cardiovascular system and lung scan	From Basics of Nuclear Medicine
Week 15	Basics of radiation therapy	From Basics of Nuclear Medicine
Week 16	Final exams week	From Basics of Nuclear Medicine

Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand the principles of nuclear physics and nuclear medicine	10%	
Prepare the radiopharmaceuticals in accurate dose	20%	
Describe nuclear image acquisition using gamma camera, SPECT and PET scan	30%	
Discuss main nuclear medicine protocols	30%	
Understand the basics of radiation therapy	10%	

Evaluation	
Assessment Tool	Weight
In class quizzes	25%
Mid-term exam	25%
Final exam	50%

Policy	
Cheating	University regulations will be applied on cases of cheating and/or plagiarism
Statement on Professionalism	Professional behavior is expected of students at all times. Attitude and professional behavior are a minimum criterion for passing this class. Examples of unprofessional behavior include but are not limited to: missing classes, tardiness, lack of attention for a speaker, talking to others during lecture, leaving a lecture prior to its completion without prior authorization of the instructor, working on other class material during class, and sleeping during class.
Cell phone	The use of cellular phone is prohibited in class rooms and during exams. The cellular phone must be switched off in class rooms and during exams.
Attendance	No points will be counted for attendance of this class, however attending the lectures will greatly enhance your grade. The student is responsible for any information discussed in lecture sessions. It is imperative to attend all classes!
Absences	University regulations will be applied. Students are not allowed to be absent for more than 20% of lectures for any reason or excuse. If a student exceeds the absence limit, he or she will not be allowed to sit for future course exams. (Please review university regulation for more details)
Make-up exams	Make-up exams is entitled for students who miss the exam with accepted legal or medical excuse endorsed by the instructor within 24 hours after the scheduled exam (Please review university regulation for more details)

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