



The University of Jordan

Accreditation & Quality Assurance Center

COURSE Syllabus

1	Course title	Pharmaceutical Radioisotopes
2	Course number	1202533
3	Credit hours (theory, practical)	2
	Contact hours (theory, practical)	2 per week
4	Prerequisites/corequisites	
5	Program title	B.Sc In Pharmacy
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Pharmacy
9	Department	Pharmaceutics & Pharmaceutical Technology
10	Level of course	Fifth year
11	Year of study and semester (s)	2016-2017, Second semester
12	Final Qualification	B.Sc
13	Other department (s) involved in teaching the course	
14	Language of Instruction	English
15	Date of production/revision	11 Jan 2017

16. Course Coordinator:

Office number: 212,
Office hours: 12-5 Sunday, 12-2 Tuesday,
Phone numbers: ext. 23325,
email address: ekayoub@ju.edu.jo

17. Other instructors:

None

18. Course Description:

The instructor will first recall the basic information related to the atomic structure and the difference between stable and radioactive isotopes. The main types of radiation will be discussed in details: their origin, energy, interaction with matter, detection and finally the protection and shielding from each type. After this major introductory part; the biological effect of radiation will be discussed followed by their medical application in diagnosis and therapy. Production of radionuclides and quality control issues specific to radiopharmaceuticals will be discussed. Finally, students will be introduced to the safety precautions that should be taken in dealing with radioactive substances.

19. Course aims and outcomes:

A- Aims:

The most important objective of this course is to give the pharmacist enough background that enables him to carry out his role as health educator. There is a lack of understanding in the community about the different applications and risk of radiation and radioactives. The pharmacist- as a health consultant, should be able to answer questions and give directions about the different radiation-related medical procedures, about the related safety precautions, about the protection from radiation,.....

Another possible outcome of this course is to introduce the students to new areas of research and potential job opportunities related mainly to the radiopharmaceuticals.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to ...

1. Know the different types of radiation: their nature, source, possible useful applications, possible biological harmful effect and how to deal with each radiation safely.
2. Know the principle of the different radiotherapy methods.
3. Know the concept and application of radiolabeling.
4. Understand the basics of radiography and nuclear medicine.
5. To acquire basic knowledge about the production of radionuclides.
6. To acquire basic knowledge about the safe dealing with radioactive materials.
7. Know the different types of radiation: their nature, source, possible useful applications, possible biological harmful effect and how to deal with each radiation safely.
8. Know the principle of the different radiotherapy methods.
9. Know the concept and application of radiolabeling.

20. Topic Outline and Schedule:

1.					
Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Ref.
Atomic and nuclear structure. Nuclear stability and Radioactive decay. Units of radioactivity.	1 week	Enam Khalil	All	Written Exams.	1,2
Radioactive decay processes. Interaction of radiation with matter.	1 week				
Shielding against radiation. Units of radiation and radiation Dosimetry. Source of radiation exposure.	1 week			Written Exams. Oral presentation and discussion.	1.2.4
Radiation detection and Counting instruments.	1.5 week			Written Exams and oral presentation and discussion.	1,4
Biological effects of radiation.	1.5 week				
Applications of Radionuclides: External & Internal Radiotherapy.	1.5 week				
Applications of Radionuclides: In-vivo diagnosis: SPECT& PET	1 week				1,2,3,4
Applications of Radionuclides:	0.5				3,4

In-vitro diagnosis: RIA	Week			
Production of Radionuclides.	1 week			Written Exams and oral presentation and discussion. 1,2,4
Radiopharmaceuticals.	2 weeks			Written Exams and oral presentation and discussion. 2,3,4
Radiation Safety.	1 week			Written Exams and oral presentation and discussion. 1,2

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- Lecturing,
- Search for and selection of suitable research article,
- Oral presentations and discussion of the selected article.

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

- Exams,
- Presentations.

23. Course Policies:

A- Attendance policies:

B- Absences from exams and handing in assignments on time: observation of students attendance (when registration process is final): taking the reason into consideration before taking any further action.

C- Health and safety procedures: NA

D- Honesty policy regarding cheating, plagiarism, misbehavior: Exams and homework are observed for any of these misconducts.

E- Grading policy: following the regulations.

F- Available university services that support achievement in the course: books are available, limited electronic references are available.

24. Required equipment:

25. References:

1. Text Book of Nuclear Medicine: Basic Science. Antonio Rocha, et al, Pub. Lea and Febiger.
2. Fundamentals of Nuclear Pharmacy. G.Saha. Pub. Springer-Verlag.
3. Radiopharmaceuticals. Ed. Adrian D. Nunn. Pub. MerceL Dekker.
4. Published articles and materials.

26. Additional information:

Name of Course Coordinator: Enam khalil Signature: ----- Date: 12 Jan 2017

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- Signature: -----

Copy to:
Head of Department
Assistant Dean for Quality Assurance
Course File