



Course Specifications

Course Title:	Radiation Protection
Course Code:	2034224-3
Program:	Bachelor in Physics
Department:	Physics Department
College:	College of Science
Institution:	Taif University

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A. Course Identification

1. Credit hours: 3
2. Course type a. University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Others <input type="checkbox"/> b. Required <input type="checkbox"/> Elective <input checked="" type="checkbox"/>
3. Level/year at which this course is offered: 12 th level /4 th year
4. Pre-requisites for this course (if any): None
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3	100%
2	Blended	0	0%
3	E-learning	0	0%
4	Distance learning	0	0%
5	Other	0	0%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

An extensive knowledge of radiation and its biological effects- applications – radiation protection – different types of radiation – units of radiation dosimetry.

2. Course Main Objective

Know the difference between different types of radiation and identify sources of radiation contamination. Know the biological effects of ionizing radiation. Learn some of the most interesting and important radiation protection techniques.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Identify sources of radiation contamination.	K4
1.2	Specify the biological effects of ionizing radiation – application of radiation-radiation reactions.	K4
2	Skills :	
2.1	Apply advanced skills, techniques, practices and creativity with critical thinking in field of radiation physics.	S1
2.2	Compare between radiation detectors and radiation dosimeters.	S4
3	Values:	
3.1	Show ability for working independently.	V1
3.2	Act responsibly and ethically and be able to present written and oral scientific reports.	V3

C. Course Content

No	List of Topics	Contact Hours
1	Radioactivity and radiation <ul style="list-style-type: none"> ▪ Types of radiation. ▪ Ionization and excitation. ▪ Ways of entry of radioactive contamination into the body. ▪ α – Decay, β – Decay, types of β – Decay and gamma radiation. 	6
2	<ul style="list-style-type: none"> ▪ Identify sources of radiation contamination. ▪ Study units of radiation dose. ▪ The absorbed Dose. ▪ The radiation weighting factor- the tissue weighting factor. 	6
3	The biological effects of ionizing radiation. <ul style="list-style-type: none"> ▪ The somatic effects of ionizing radiation. ▪ The hereditary effects of ionizing radiation. ▪ The radiation reactions. 	6
4	Application of radiation and radioactive isotopes.	4
5	Radiation exposures and dose limits. <ul style="list-style-type: none"> ▪ Maximum permissible Doses (MPD). ▪ Treatment of contaminated person. 	6
6	Final Revision.	2
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Identify sources of radiation contamination.	Lecture Discussion	Written exam.
1.2	Specify the biological effects of ionizing radiation – application of radiation-radiation reactions.	Lecture and Group discussion	Written exam.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	Skills		
2.1	Realize the types of radiation.	Lectures	Written exam and Homework reports
2.2	Formulate the application of radiation and radioactive isotopes.	Groups discussion	Written exam
3.0	Values		
3.1	Show ability for working independently.	Group discussion	Homework reports and projects
3.2	Act responsibly and ethically and be able to present written and oral scientific reports.	Groups discussion	Homework reports and projects

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments and Interaction during lectures	continuous	10%
2	Midterm exam	6 th	30%
3	Short exam	9 th	10%
4	Final exam	12 th	50%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

6 Hours per week during office-hours, in teacher's staffroom or as per the arrangement made by the teacher.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	H. Biological Effects of Radiation. By Alan Martin and Samuel A. Harbison, London. Champan and Hall Ltd, 2003.
Essential References Materials	1-Radiation Protection and Recovery-1 st Edition, Alexander Hollander. 2- Basic of radiation protection for everyday use – How to achieve ALARA working tips and Guidelines, Leonie Munro, 2004.
Electronic Materials	1- https://www.dropbox.com/sh/ 2- https://www.dropbox.com/sh/ A 4- http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html .
Other Learning Materials	1- Multi media / CD associated with the textbooks (when available).

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture room with max 60 seats.
Technology Resources (AV, data show, Smart Board, software, etc.)	data show, Smart Board, software
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	NONE

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Student Feedback on Effectiveness of Teaching	Students	Indirect
Evaluation of Teaching	Peer reviewer Program coordinator Departmental council Faculty council	Indirect
Improvement of Teaching	Program coordinator Relevant committee	Direct
Quality of learning resources	Students Instructor Faculty	Indirect
Extent of achievement of course learning outcomes,	Program coordinator Instructor	Direct
Course effectiveness and planning for improvement	Program coordinator Instructor	Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	October 2, 2022