هيئة تقويم التعليم
Education Evaluation Commission
المركز الوطني للتقويم والاعتماد الأكاديمي
National Center for Academic Accreditation and Evaluation

COURSE SPECIFICATIONS (CS)

Radiation Physics

PHYS 486

June 2018

هيئة تقويم التعليم
Education Evaluation Commission

Course Specifications

Institution King Saud University	Date Nov. 2017
College/Department: College of Sciences, Department of Physics and Astronomy	

A. Course Identification and General Information

1. Course title and code: Radiation physics - PHYS 486 Elective
2. Credit hours 2(2+0+0)
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) BSc. in Physics
4. Name of faculty member responsible for the course Dr. Ashraf E.M. Khater
5. Level/year at which this course is offered 8^{th} level
6. Pre-requisites for this course (if any) Phys 481
7. Co-requisites for this course (if any)
8. Location if not on main campus
9. Mode of Instruction (mark all that apply)

a. traditional classroom	√	What percentage?	80
b. blended (traditional and online)		What percentage?	
c.E-learning		What percentage?	20
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course?
 	
- The student should grasp the basic information about:
  - radiation quantities, radiation doses and units
  - radiation dosimeters
  - biological effects of radiation
  - internal and external exposure to radiation
  - protection against radiation and radiation shielding,
  - protection from various sources of radiation, radioactive decontamination and radioactive waste management
- The student should identify the radiation protection rules.
- The student should be able todefine the radioactive wastes and their proper handling.
- The student should be able to execute the basic radiation protection regulations and radiation dose calculations.

2. Briefly describe any plans for developing and improving the course that are being implemented (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) - Explaining the strategy of the course in the beginning of the semester - Introducing radiation dose calculations software, - Using some of International Atomic Energy Agency (IAEA) training materials on radiation protection. - Revising the available radiation protection rules and regulation according to the latest published information when it is possible. -

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description: Definition of radiation quantities,Radiation doses and their units, Instruments for measuring personal doses, radiation monitoring and radioactive contamination, Biological effects of radiation, External and internal radiation exposure, Protection against different radiation sources and shielding, Radioactive wastes management.

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours

Introduction to atom , nucleus and radiation	1	2
Definition of radiation quantities,	2	4
Radiation doses and their units,	2	4
Instruments for measuring personal doses, radiation monitoring and radioactive contamination,	3	6
Biological effects of radiation,	2	4
External and internal radiation exposure,	2	4
Protection against different radiation sources and shielding,	2	4
Radioactive wastes management.	1	2
Total:	15	30

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	30	-	-	-	-	30
Credit	30	-	-	-	-	30

3. Additional private study/learning hours expected for students per week. 3

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). Second, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. Third, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	define the radiation units and how to dispose it	Lecture	Exams
2.0	**Cognitive Skills**		
2.1	Calculations of radiation doses	small group work and debates	lab reports, debates
2.1	Develop skills to solve the problems regarding radiation physics	research activities	
3.0	**Interpersonal Skills & Responsibility**		
3.1	Analyze energy curves of standard isotopes	research activities	lab reports
3.1	Use the different kinds of radiation and measuring equipment, to evaluate isotope's activity parameters.	lab demonstrations and small group work	lab reports, debates
4.0	**Communication, Information Technology, Numerical**		
4.1	Interpret physical reality of results	Debates and small group discussion	short essays
	Calculate parameters of some unknown radioactive isotopes	Research activities, lab demonstrations	lab reportsand Exams
5.0	**Psychomotor**		
1.1	Perform some measurements by using survey-meters and radiation monitors and dosimeters.	Research activities, lab demonstrations	Lab manualsand Exams.

6. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Homework and attendance	-	10%
2	Essay	10	10%
3	Quizzes	-	10%
4	First Mid-term exam	6	15%
5	Second Mid-term exam	11	15%
6	Final Exam	15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- No arrangements.
- Office hours: 3 hours per week.

E Learning Resources

1. List Required Textbooks

Basics of radiation Physics, A. Farouq and A. Alsoraya, 3rd edition, KSU, 2006 (Arabic)

2. List Essential References Materials (Journals, Reports, etc.)

Introduction to health physics. Johnson H.,5th edition Mc-Graw-hill, 2017

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

-Website of King Abdullah City for Atomic and Renewable Energy, Saudi Arabia (https://www.kacare.gov.sa)

- Website of International Atomic Energy Agency (IAEA), (https://www.IAEA.org)

- Website of Health physics society (https://www.hps.org).
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Lecture room
2. Computing resources (AV, data show, Smart Board, software, etc.) Computer lab
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Radiation physics laboratory

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching Student questionnaire by the end of each term
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department Results of exams
3 Processes for Improvement of Teaching Action plan

4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) Course specification Course report
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • The course material and syllabus are periodically reviewed and compared with similar materials taught in similar departments in other universities. • Taking necessary measures to implement the findings of the comparison and check up processes.

Name of Instructor: ____

Signature: ____________________________ Date Report Completed: _____________

Name of Field Experience Teaching Staff ______________________________________

Program Coordinator:Prof. Dr Ashraf E.M. Khater

Signature: ____________________________ Date Received: ____________________