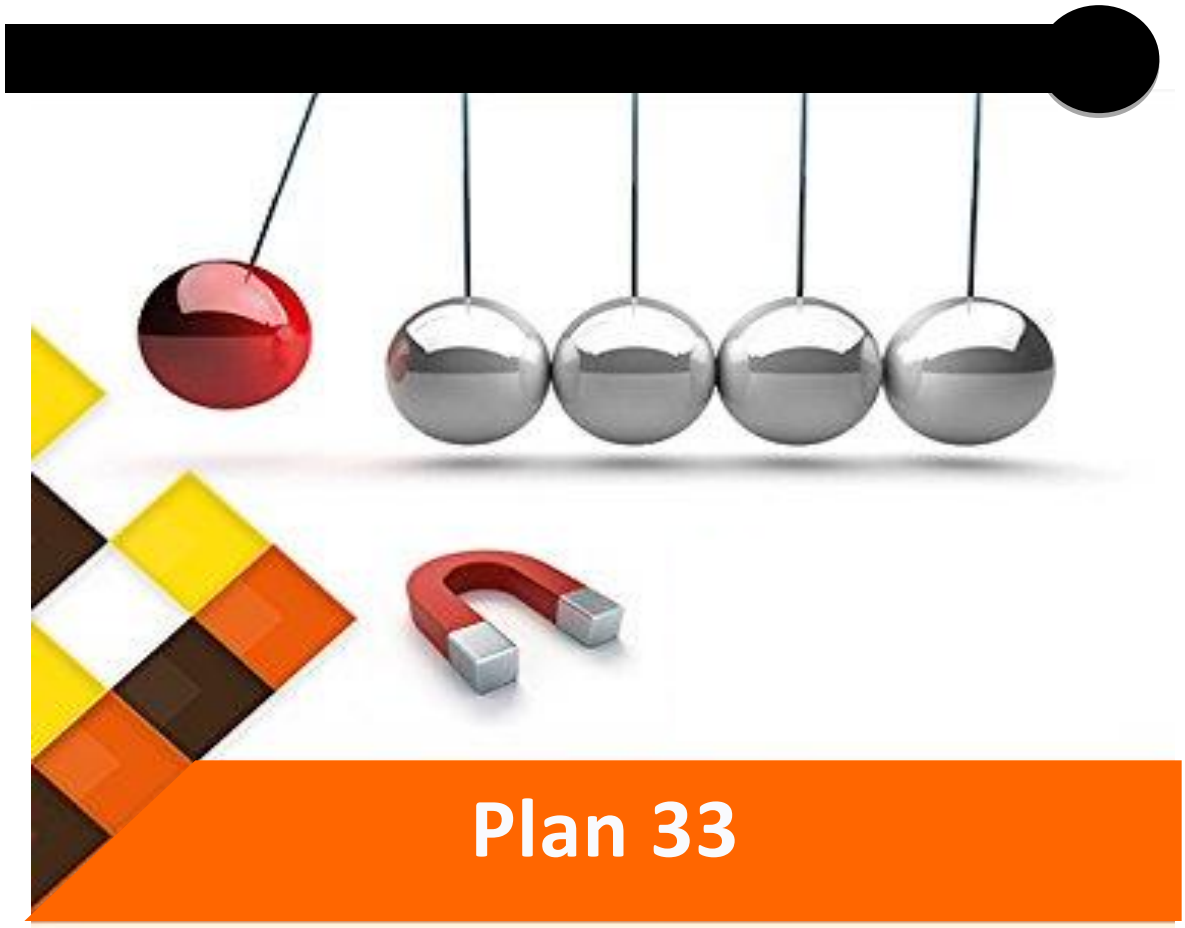
Kingdom of Saudi Arabia
Umm Al-Qura University
Faculty of Applied Science
Physics Department

المملكة العربية السعودية
جامعة أم القرى
كلية العلوم التطبيقية
قسم الفيزياء

B. Sc. Medical Physics Program Module Handbook

Study Plan 33



معالي مدير الجامعة
الدكتور بكري بن معتوق عساس

سعادة عميد الكلية
د. وليد بن جميل ألطف

سعادة وكيل الكلية
د./ حاتم الطس

سعادة وكيلة الكلية لفرع الطالبات
د/ رجاء معتوق

سعادة وكيل الكلية للتطوير الجامعي
الدكتور/ فهد الهاشمي

سعادة وكيل الكلية للشئون الاكاديمة
الدكتور/ حسين ابو الريش

سعادة وكيل الكلية للدراسات العليا
أ.د./ باسم حسين اصغر

سعادة وكيلة الكلية لشئون التعليم والتطوير
د/ بدرية الجحدلي

سعادة رئيس قسم الفيزياء

الدكتور صالح بن مرزوق اللقماني

سعادة وكيلة القسم لفرع الطالبات

الدكتوره/ زينب مطر

مقدمة

الحمد لله رب العالمين والصلاة والسلام على سيدنا ونبينا محمد وعلى آله واصحابه والتابعين الى يوم الدين،

أنشئ قسم الفيزياء في عام 1385/1384 هـ الموافق 1965/1964م، كتوأم لقسم الرياضيات، وذلك عندما صدرت أول لائحة لكلية التربية بجامعة الملك عبد العزيز شطر مكة المكرمة، وقد تخرجت عدة دفعات على نظام التخصص المزدوج (فيزياء ورياضيات).

استمر العمل على هذا النظام لمدة عشر سنوات، حتى عام 1395/1394هـ حيث تم فصل قسم الفيزياء عن قسم الرياضيات، واصبح قسما قائما بذاته يمنح درجة البكالوريوس في الفيزياء والفيزياء الطبية.

و في عام 1397/1396هـ، ادخل نظام الساعات المعتمدة على جامعة الملك عبد العزيز شطر مكة المكرمة، وأصبح القسم يقدم مقرراته وفقا لنظام الساعات المعتمدة. ويمنح درجة البكالوريوس في الفيزياء. وفى عام 1401/1400 هـ تأسست جامعة أم القرى بمكة المكرمة، ثم انشئت كلية العلوم التطبيقية واصبح القسم تابعا لها. وأصبح يمنح درجة البكالوريوس في الفيزياء و الفيزياء الطبية.

وهناك ثلاث خطط دراسية من أهم الخطط بالنسبة للقسم، وهى الخطة 19، والخطة 33، والخطة 37، والأخيرة هي الأحدث وهى قيد التنفيذ الأن، وفيما يلى نستعرض توزيع المقررات وتوصيف البرنامج وتوصيف المقررات لبرنامج الفيزياء الخطة 33.

وفقنا الله وإياكم الى ما يحبه و يرضاه ،،،

قسـم الفيزياء

B. Sc. Medical Physics Program Module Handbook

Physics Department –College of Applied Sciences

Umm Al-Qura University

(Study Plan 1433 A.H)

Preface

Saudi Arabia is the leading Islamic country due to its religious status and historic importance. Muslims direct to Mekka in Saudi Arabia in their prayers and long to go there to perform the hajj or umrah. In the modern age, KSA has become a model for adopting modern civilization aspects and simultaneously keeping its originality and peculiarity. Additionally, KSA is characterized with its internal and external policy that is based on the instructions of the scared Islamic Law. KSA has a predominant importance in the world for its sage policy that has paramount influence on the international politics and economics course. The Five-year Development Plans carried out by KSA throughout the past 30 years have achieved a developmental breakthrough and accelerated the growth rate incomparably to many other countries. KSA is working on promoting development and establishment of utilities and basic equipment alongside with human resources qualification.

Umm Al-Qura University

After the annexation of Hijaz in 1344 A.H./ 1925 A.D., the main concern of the state was paying attention to intellectual activity and education, and looking after students. In this course, the first General Knowledge Directorate was established and then schools were opened throughout KSA regions and were equipped and supplied with teachers from inside and outside the country. One of the first established institutes was the Scientific Institute in Mekka in 1345 A.H. / 1926 A.D., Missions Qualification School in Mekka in 1355 A.H. / 1936 A.D., and Dar Al-Tawhid in Taif in 1368 A.H. in addition to building scientific institutes and schools all over cities and regions.

In 1369 A.H. King Abdul Aziz order the establishment of College of Shari'a in Mekka to be the first university educational institution in the country. It is the main establishment of the Umm Al Qura University. Although the recent establishment of the Umm Al Qura University in its current shape, it is one of the most distinguished universities due to its site and authenticity. The Umm Al Qura University is prominent as an academy with great scientific reputation in teaching Shari'a and Islamic studies, in addition to modern scientific specializations and applications.

The University of Umm Al-Qura, with what it has from qualified human resources, advanced infrastructure, scientific programs, research priorities, and management and financial systems, will become:

- Trusted by the community and is its first choice.
- A world authority on accreditation for Islamic studies (Shari'a) and Arabic Language.
- House of expertise and the official reference on the issue of developing the environment of Makkah and the holy places.
- An environment that facilitates innovation in knowledge and science, according to the established world criteria.

The Vision:

Pioneering in Education, scientific research and the service of the local and global society.

Goals:

- World leadership in Islamic science (Shari'a) and Arabic Language.
- To become the number one university in humanities, social and environmental studies related to Hajj and Umrah.
- To be among the first ten universities in the Arab world.

Values:

- Adhering to the Islamic approach
- Human and the environment development in Makkah.
- Excellence in work, and appreciating the achievement.
- Team spirit in the work.
- Establishing an excellent education environment.
- Developing skills and capabilities, and supporting the talented people.
- Adopting the principle of continuous education.

- Cooperation, communicating, and partnerships with national, regional and international organizations.

Faculty of Applied Sciences

The Faculty of Applied Science is the first scientific Faculty at Umm Al-Qura University. The Faculty was established in 1401 A.H. and includes four departments (Physics, Mathematics, Chemistry and Biology). The Faculty departments award Bachelor's and Master's degrees and also the departments of Chemistry and Biology award the Ph.D. degree.

The Faculty of Applied Science has taken further steps to enhance its scientific programs and lab as well as research facilities. It now has over 60 laboratories as well as an interactive training center that is concerned with giving students the opportunity to train at governmental sectors and private sector establishments. Amplifying scientific programs, particularly those dedicated to serve the society as well as introducing new Ph.D. programs in the departments of mathematics and physics; and starting new departments (e.g. The Department of Environmental Studies) and centers of distinction as well as creating different academic posts of specialization in tandem with a number of international research centers.

Physics Department

The Department of Physics has been established as part of the Faculty of science in the year 1401 A.H. under Faculty of Applied Science at that time, constituted four departments (Mathematics, Physics, Chemistry, Biology). The Department of Physics provides B.Sc. degree in physics and educational physics for female and male which has been upgraded later to join the masters and in 1403 A.H.

A new major of the medical physics was established within the physics department to provide female and male as a medical physicist at the hospitals, research center and radiation protection, when the branch was integrated fully with the base department at the Faculty of Applied Science in 1404 A.H. There was an old study plan 1419.H for both pure and medical physics programs. At present, although there is a current study plan 1433.H that all the graduates from the program, there are still a few students still studying at study plan 1419.H.

The department old study plan (1419.H) for both pure and medical physics. Physics Department is awarding, male and female students who has successfully completed 142 study units, the degree of Bachelor's of Science in physics and M.Sc. is awarded in separate programs. Also in the medical physics program both male and female who successfully completed 146 study units awarded degree in medical physics.

The study plan 1433.H for physics and medical physics for both male & female students are developed by adding a foundation year and to reduce the graduation credit hours for major physics to 132 hours and medical physic to 135 hours with some changes in physics courses to meet with high quality standard education. The modified study plan (recommendation 1437) was conducted to give the student a track apart from the common foundation year with the Faculty of Engineering, Faculty of Computer Sciences, and the Faculty of Applied Sciences trend. This enables the students to admit the programs of the Faculty of Applied Sciences directly.

The B.Sc program in the physics department in the Faculty of Applied Science aims at providing the students with the required knowledge for employment within and outside the university.

The Faculty of Applied Science has been consistently carrying out the development of all its programs, including a foundation year for the admitted secondary school students.

This introduction gives a brief recapitulation of the history of the department, its goals, program requirements as well as the overall structure of the plan and content of the main courses and otherwise supports courses. Renew of the two programs (Physics and Medical Physics programs) approval of the overall structure and department plans has been decided by the year 1431 A.H.

Vision of Physics Department

Achieving pioneering in physics and medical physics at a local and international level, and creating active partnerships with community organizations.

Mission of Physics Department

Realizing creativity and distinction in higher education and scientific research in the field of pure and medical physics. The mission is to prepare graduates with high scientific and technical skills who are capable of serving and developing the community.

Objectives of Physics Department

1- Achieving pioneering in higher education, scientific research and community services.

2- Upgrading graduates' standard through application of total quality measures.

3- Preparation of innovative educational programs that qualify graduates who can adequately respond to the community needs and the labor market.

4- Providing students with essential knowledge and skills in the field of pure and medical physics.

5- Promoting scientific research and qualifying professional researchers to participate in conducting distinguished scientific research.

6- Serving community organization through establishing smart partnerships.

7- Establishing smart partnership with research centers and distinguished international universities.

8- Attracting highly qualified scientific Cadre and distinguished administrative caliber.

The student should successfully pass 135 credit hours before graduation. This can be achieved through eight semesters distributed on the following levels:

First and second levels (the foundation year):

Course No.	Course Code	Course name	Credit hours
Level 1 (Semester 1)			
4800170	Ngm	English (1)	6
4800140	Math	[Mathematics (1)] Introduction to Mathematics	4
4800130	Physics	General Physics	4(3+1+0)
4800150	Tec	Computer skills (1)	2
Level 2 (Semester 2)			
4800153	Tec	Basic Computer programming skills (2)	3
4800104	Nhg	Learning and studying skills	3
4800171	Ngm	English (2) Technical English skills	4
4800141	Math	[Mathematics (2)] Introduction to Mathematics	4
Total			30

Level 3 (Semester 3)				
Course No.	Course Code 403	Prerequisite	Course name	Credit hours
403200	Phys	4800130	General Physics (2)	4(3+0+1)
403243	Phys	4800141	Method in Theatrical Physics (1)	2(2+0+0)
401211	Biol	-----	Cell Biology	4(3+0+1)
401102	Biol	-----	Biology I: Zology	2(2+0+0)
402101	Chem	-----	General Chemistry	4(3+0+1)
601101	Slm	-----	Islamic Culture (1)	2(2+0+0)
605101	Slm	-----	Holly Quran (1)	2(2+0+0)
Total				20

Forth level:

Level 4 (Semester 4)				
Course No.	Course Code	Prerequisite	Course name	Credit hours
403280	Phys	4800130	Fundamental of Medical Physics	4(3+0+1)
403220	Phys	403243	Classical Mechanics (1)	3(3+0+0)
403244	Phys	403243	Method in Theatrical Physics (2)	3(3+0+0)
401364	Biol	401102	Animal Biology	3(3+0+0)
601201	Slm	601101	Islamic Culture (2)	2
605201	Slm	605101	Holly Quran (2)	2
Total				17

Fifth level:

Level 5 (Semester 5)				
Course No.	Course Code	Prerequisite	Course name	Credit hours
403381	Phys	403280	Laser in Medicine	2(2+0+0)
403383	Phys	403280	Health Physics	3(3+0+0)
403384	Phys	403280	Physics of Radiation effects	2(2+0+0)
403350	Phys	403243	Modern Physics	4(3+0+1)
601301	Slm	601201	Islamic culture (3)	3
403201	Phys	403200	Electromagnetism (1)	3(3+0+0)
605301	Slm	605201	Holly Quran (3)	2
501101	Arb		Arabic language	2
Total				21

Sixth level:

Level 6 (Semester 6)				
Course No.	Course Code	Prerequisite	Course name	Credit hours
403385	Phys	403384	Medical radiation Physics (1)	4(3+0+1)
403386	Phys	403384	Physics of Radiation Therapy (1)	4(3+0+1)
403388	Phys	403384	Radiation Protection	2(2+0+0)
403389	Phys	403384	Physics of Medical Imaging	3(3+0+0)
403390	Phys	403383	Physics of Ultrasound in Medicine	2(2+0+0)
403391	Phys	403381	Computing in Medicine	1(1+0+0)
403344	Phys	403244	Quantum Mechanics (1)	3(3+0+0)
601401	Slm	601301	Islamic Culture (4)	2
Total				21

Seventh level:

Level 7 (Semester 7)				
Course No.	Course Code	Prerequisite	Course name	Credit hours
403492	Phys	403385	Medical Radiation Physics (2)	4(3+0+1)
403493	Phys	403386	Physics of Radiation Therapy (2)	3(3+0+0)
403495	Phys	403389	Nuclear Medicine	4(3+0+1)
403496	Phys	403389	Physic of Bio-material	3(3+0+0)
403370	Phys	403344	Solid State Physics (1)	3(3+0+0)
102101	ProH		Profit History	2
605401	Slm	605301	Holly Quran (4)	2
Total				21

Eighth level:

Level 8 (Semester 8)				
Course No.	Course Code	Prerequisite	Course name	Credit hours
403498	Phys	Dept. acceptance	Training project	5 Hr
Total				5

Umm Al-Qura University

Date : 22-10-2015

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Degree Plans

major : 40301 Medical Physics

edition : 33

hours : 135

level 1

course code	course name	prerequisite	prerequisite course
4800140-4	Introduction to Mathematics 1		
4800150-2	Computer Skills1		
4800170-6	English Language		
4800130-4	General Physics(1)		

level 2

course code	course name	prerequisite	prerequisite course
4800141-4	Introducion to Maths(2)	4800140-4	Introduction to Mathematics 1
4800153-3	Basic Computer Programing Skills	4800150-2	Computer Skills1
4800104-3	learning and Study Skills		
4800171-4	Technical English Language	4800170-6	English Language

level 3

course code	course name	prerequisite	prerequisite course
403243-2	Method in theatrical Physics I	4800141-4	Introducion to Maths(2)
605101-2	The Holy Qur'aan I		
401102-2	Biology I: Zoology		
403200-4	General Physics II	4800130-4	General Physics(1)
402101-4	General Chemistry		
401211-4	Cell Biology		
601101-2	Islamic Culture I		

level 4

course code	course name	prerequisite	prerequisite course
403280-4	Fundamental of medical Physics	4800130-4	General Physics(1)
605201-2	The Holy Qur'aan II	605101-2	The Holy Qur'aan I
601201-2	Islamic Culture II		
403244-3	Method in theatrical Physics II	403243-2	Method in theatrical Physics I
403220-3	Classical Mechanics I	403243-2	Method in theatrical Physics I
401364-3	Animal Biology	401102-2	Biology I: Zoology

level 5

course code	course name	prerequisite	prerequisite course
403384-2	Physics of radiation effects	403280-4	Fundamental of medical Physics
403381-2	Laser in medicine	403280-4	Fundamental of medical Physics
403383-3	Health Physics	403280-4	Fundamental of medical Physics
605301-2	The Holy Qur'aan III	605201-2	The Holy Qur'aan II
601301-3	Islamic Culture III	601201-2	Islamic Culture II
403201-3	Electromagnetism	403200-4	General Physics II
501101-2	Arabic Language		
403350-4	Modern Physics	403243-2	Method in theatrical Physics I

level 6

course code	course name	prerequisite	prerequisite course
403389-3	Physics of medicaal imaging	403384-2	Physics of radiation effects
403344-3	Quantum Mechanics I	403244-3	Method in theatrical Physics II
403386-4	Physics of radiation therapy I	403384-2	Physics of radiation effects
403385-4	Medical radiation Physics I	403384-2	Physics of radiation effects
403390-2	Physics of Ultrasound in medicine	403383-3	Health Physics
403388-2	Radiation Protection	403384-2	Physics of radiation effects
403391-1	Computing in medicine	403381-2	Laser in medicine
601401-2	Islamic Culture IV		

level 7

course code	course name	prerequisite	prerequisite course
403495-4	Nuclear Medicine	403389-3	Physics of medicaal imaging
403492-4	Medical radiation Physics II	403385-4	Medical radiation Physics I
403493-3	Physics of radiation therapy II	403386-4	Physics of radiation therapy I
403496-3	Physic of Bio-material	403389-3	Physics of medicaal imaging
403370-3	Solid State Physics I	403344-3	Quantum Mechanics I
102101-2	The Biography of Prophet Muhammad (pbuh)		
605401-2	The Holy Qur'aan IV	605301-2	The Holy Qur'aan III

level 8

course code	course name	prerequisite	prerequisite course
403498-5	Training Project		

Course description for the undergraduate study plan 1433A.H. for the Physics Department (Physics + Medical Physics group Male/ Female section)

توصيف المقررات لمواد تخصص فيزياء بحته/فيزياء طبية

Level 1

English (1) 4800170-6

Introduction to Mathematics 4800140-4

General Physics 4800130-4

Computer skills (1) 4800130-4

Computer skills (1) 4800150-2

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course title:

Introduction to Mathematics (1)

Course code: 4800140-4

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date : **15/3/1438**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Derivative and Integral I (MATH 101) (Code: 4800140-4)**
2. Credit hours: **4 (3+1+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Physics**

   (If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course **Dr. Yousf Jaha**
5. Level/year at which this course is offered: **1st Year / Level 1**
6. Pre-requisites for this course (if any): **NIL**
7. Co-requisites for this course (if any): ---
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:

The mode of instruction is distributed and used only one Traditional classroom with 100%, items.

B Objectives

1. What is the main purpose for this course?

The objective of this course is to establish the meaning of the ends of the computer and use in communication, and differentiation, integration and applications of it.

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)

1- Explain strategy of the course in the beginning of the semester
2- Outlines of the Mathematical concepts, theories and the associated proofs.
3- Highlighting the day life applications whenever exist.
4- Encourage the students to see more details in the international web sites and reference books in the library.
5- Discussing some selected problems in each chapter.
6- Cooperate with a different institution to find how they deal with the subject
7- Renew the course references frequently
8- Frequently check for the latest discovery in science

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

Course Description:

1. *To understand basic fundamentals of real numbers, Cartesian coordinate systems, equation of straight line, the equation of a circle.*
2. *The students should be trained on physical and generic skills (knowledge – cognitive – interpersonal – communication – problem solving – IT)*
3. To describe the functions and their graphical representation, sinusoidal function, and the limits of the functions.
4. To understand the meaning of the slope of the curve, instantaneous velocity.
5. *To apply the rules of differentiation and integration in mathematical equations.*
6. To describe and solve any problem in physics related to differentiation and integration.

The overall goal is to use the scientific method to come to understand the enormous variety of differentiation and integration in terms of a few relatively simple laws

1 Topics to be Covered		
Topics	No of Weeks	Contact hours
1- Prerequisites for Calculus		
1- Real numbers	1	1.5
2- Cartesian coordinate system		1.5
3- The equation of straight line.		1
4- Functions	1	1.5
5- Combinations of Functions		1.5
6- The equation of a circle.		1
2- The functions and limits		
1- The functions and curves.	1	1
2- Definition of Limit		1
3- Theorms on Limits(The limits of the function, multiplication by a constant, Addition, Subtracting, Division, Roots).		2
4- One-sided Limits	1	1
5- Limits of Trigonometric function		1
6- Continuous of the function.		2

3- The Derivative		
1- The Derivative of a function	1	1
2- Rules for finding Derivatives		1
3- Derivatives of sine and cosine functions		2
4- Increments and Differentials	1	1
5- Implicit Differentiation		1
6- High order differentiation		2
4- Application on Derivative		
1- Local Extrema of Functions	1	1
2- Rolle's Theorem and the mean value theorem		1
3- The First Derivative Test		1
4- Concavity and the second Derivative test		1
5- Horizontal and Vertical Asymptotes	1	1
6- Applications of Extrema		1
7- The derivative as a rate of Change		1
8- Related Rates		1
5- Integral		
1- Definition of Definite Integral	1	1
2- Area		1
3- Properties of Definite Integral		2
4- The mean value of Theorem of Definite Integrals	1	1
5- Indefinite Integrals and Change of Variables		1

6- Numerical Integration.		2
6- Applications of the Definite Integral		
1- Area.	1	1
2- Solids of Revolution		1
3- Volumes Using Cylindrical Shells.		2
4- Volumes by Slicing	1	1
5- Work.		1
6- Force Exerted by a Liquid.		2
7- Arc Length.	1	2
8- Other Applications.		2

Practical part:

NIL

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**60**	**-**	**-**	**-**	**-**	**60**
Credit	**4**	**-**	**-**	**-**	**-**	**4**

3. Additional private study/learning hours expected of students per week.	**8**

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	*knowledge that students should know and understand when they complete the course are as follow:* *(i) Learning fundamentals in differentiation theory* *(ii) Understanding the integration theories and their applications.* *(iii) Improving logical thinking.* *(iv) To use mathematical formulation to describe the physical principle or phenomena* (v) Ability to describe the phenomena mathematically.	1- Demonstrating the basic information and principles through lectures and the achieved applications 2. Discussing phenomena with illustrating pictures and diagrams 3. Lecturing method: a. Blackboard b. Power point c. e-learning 4. Tutorials 5. Revisit concepts 6. Discussions 7. Brain storming sessions *8. Start each chapter by general idea and the benefit of it;* *9. Learn the student background of the subject;* *10. Show the best ways to deal with problem;* *11. Keep the question "why" or "how" to explain always there;* *12. Build a strategy to solve problem.*	1. Solve some example during the lecture. **2.** Exams**:** a) Quizzes b) Short exams (mid term exams) c) Long exams (final) d) Oral exams 3. Discussions with the students. 4. Ask the student to clear the misunderstanding of some mathematical principle. 5. Ask quality question.
2.0	**Cognitive Skills**		
2.1	1. How to use mathematical laws and principles to understand the subject 2. How to simplify problems and analyze	1. Preparing main outlines for teaching 2. Following some proofs *3. Define duties for each chapter* 4. Home work assignments *5. Encourage the student to look for the information in*	1. Midterm's exam. Exams, short quizzes 2. Asking about mathematical laws previously taught 3. Writing reports on selected parts of

	phenomena 3. *Analyse and explain natural phenomena.* 4. *Ability to explain the idea with the student own words.* 5. Represent the problems mathematically.	*different references* 6. *Ask the student to attend lectures for practice solving problem* 7. *Ask the student to do small research.*	the course 4. Discussions of how to simplify or analyze some phenomena
3.0	**Interpersonal Skills & Responsibility**		
3.1	Work independently. The students learn independently and take up responsibility.	1. Learn how to search the internet and use the library. 2. Learn how to cover missed lectures. 3. Learn how to summarize lectures or to collect materials of the course. 4. Learn how to solve difficulties in learning: solving problems – enhance educational skills. 5. Develop her interest in Science through :(lab work, field trips, visits to scientific and research. Encourage the student to attend lectures regularly by: ▪ Giving bonus marks for attendance ▪ Assigning marks for attendance. Give students tasks of duties	1. Quizzes on the previous lecture 2. Checking report on internet use and trips 3. Discussion 4. *The accuracy of the result gained by each group will indicate good group work* 5. *Presenting the required research on time and the degree of the quality will show the sense of responsibility.*

4.0	**Communication, Information Technology, Numerical**		
4.1	1. Computation 2. Problem solving 3. Data analysis and interpretation. 4. Feeling mathematical reality of solving problems.	1. *Know the basic mathematical principles.* 2. Use the web for research. 3. *Discuss with the student.* 4. *Exams to measure the mathematical skill.* 5. Clear the weakness point that should be eliminated. 6. *Encourage the student to ask for help if needed.* 7. Computational analysis. 8. Data representation. 9. *Lectures for problem solution.* 10. Encourage the student to ask good question to help solve the problem. 11. Display the lecture note and homework assignment at the web.	1. *Their interaction with the lectures and discussions.* 2. The reports of different asked tasks. 3. *Homework, Problem solutions assignment and exam should focus on the understanding.* 4. Results of computations and analysis. 5. Comments on some resulting numbers.
5.0	**Psychomotor**		
5.1	N/A	N/A	N/A

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	Exercises & Home works, Participation in activities lectures and in-class problem solving.	All weeks	20 %
2	1st Class Test Exam	8th week	15 %
3	2nd Class Test Exam	11th week	15%
4	Final Exam	16th week	50%

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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks

[1] Calculus with analytic Geometry, E. Swokowski, PWS Publishers, 1983.

[2] Calculus with analytic Geometry, Edwin J. Purcel Prentice-Hall, 1984.

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

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

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

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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board. There are enough laboratories for experimental physics, provided with air conditions, good data show, and experimental equipment.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each classroom and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching
• Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department
• Revision of student answer paper by another staff member. • Analysis the grades of students.
3 Processes for Improvement of Teaching
• Preparing the course as PPT. • Using scientific flash and movies. • Coupling the theoretical part with laboratory part • Periodical revision, of course content.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department.
- Feedback evaluation of teaching from independent organization.
- Independent evaluation by another instructor that give the same course in another faculty.
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

1- The following points may help to get the course effectiveness
   - Student evaluation
   - Course report
   - Program report
   - Program Self study
2- According to point 1 the plan of improvement should be given.

Name of Instructor: _____ **Dr. Yousf Jaha** _____

Signature: _____ Date Report Completed: _____

Name of Field Experience Teaching Staff _____

Program Coordinator:_____

Signature: _____ Date Received: _____

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Course title: English Language (1)

Course code: 4800170 – 6

This form Compatible with NCAAA 2013 Edition

Course Specifications

Umm Al-Qura University

English Language Center

English Language for Students of the Department of Physics

1. COURSE TITLE: **English Language**	2. COURSE NUMBER: **(4800170 – 6)**
3. Course Required ☐ Elective ☐	4. Number of Credits: **6**
6. COURSE PEEQUISITES: **Admittance to the Department of Physics**	5. Number of Contact Hours: **Ten hours a week for a total of 160 hours per semester**
7. COURSE TIME: **First Year, first Semester**	
Resource Book: ***Milestones in English A1***, and ***Milestones in English A2***	

English Language 705101-4 is an English for General Purposes (EGP) course that develops the language skills needed for academic study in English by teaching essential vocabulary, preparing students for speaking and building basic academic writing skills. As such, it is a pre-requisite for the English for Specific Purposes (ESP) courses offered to the students of the Department of Architecture by the ELC. All classes are held in language labs.

All students are required to take this course.

At the end of the first semester, successful students are expected to be at the beginning of the intermediate level of English, ready to take their course in English for Specific Purposes (ESP).

Students are evaluated as follows:

1. Active participation, attendance, submitting on time finished assignments: 20%

2. Midterm Exam: 30%

3. Final Exam: 50%

Course Delivery Plan

Coverage of Planned Program

Weekly Instruction: 10 hours; Total: Semester Instruction: 160 hrs

Week No.	Unit / topic*	Planned Hours
Textbook: Milestones in English A1		
Week 1	Introduction to the course	**10**
Week 2	Unit 1: Introductions	**10**
Week 3	Unit 2: People and places	**10**
Week 4	Unit 3: Family and things	**10**
Week 5	Unit 4: Food around the world	**10**
Week 6	Unit 5: Free time	**10**
Week 7	Unit 6: Daily life	**10**
Week 8	Unit 7: The world around us	**10**
Week 8: Wednesday & Thursday: Midterm Exam		
Week 9	Unit 8: Life in the past	**10**
Week 10	Unit 9: Famous people	**10**
Week 11	Unit 10: Plans	**10**
Textbook: Milestones in English A2		
Week 12	Unit 1: Your world	**10**
Week 13	Unit 2: My day	**10**
Week 14	Unit 3: Work	**10**
Week 15	Unit 4: Places	**10**
Week 16	Unit 5: Retail	**10**
Week 16: Wednesday & Thursday: Final Exam		

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course title: General Physics (1)

Course code: 4800130-4

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date : **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **General Physics 1 (Code: 40800130-4)**			
2. Credit hours: **4 (3+1+0) Hrs**			
3. Program(s) in which the course is offered. **B.Sc Physics; B.Sc Chemistry; B.Sc Biology; B.Sc Mathematics.** (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course **One of the academic staff member**			
5. Level/year at which this course is offered : **1st Year / Level 2**			
6. Pre-requisites for this course (if any) : ---			
7. Co-requisites for this course (if any) : ---			
8. Location if not on main campus: **Main campus and Alzaher**			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	✓	What percentage?	**100%**
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course? This course is designed to demonstrate and consolidate the basic physics concepts in the branches of physics such as mechanics, properties of matter, heat and optics and also aims to link the mathematical equations to the applied physics.
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) 1- Outlines of the physical laws, principles and the associated proofs. 2. Highlighting the day life applications whenever exist. 3. Encourage the students to see more details in the international web sites and reference books in the library. 4- Encourage the student to build an example of different experiments related to course 5- Frequently check for the latest discovery in science

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

Course Description: The course will cover the principle of physics, such as measurements, work and energy, Newton's laws, heat, fluid mechanics, and light. This course will provide a conceptual and experimental background in physics sufficient to enable students to take courses that are more advanced in related fields.

1 Topics to be Covered

Topics	No of Weeks	Contact hours
❖ **Measurement** 1- The physical quantities, standards, and Units. 2- The international system of units. 3- The Standard of time 4- The Standard of length 5- The Standard of Mass 6- Precision and significant figures. 7- Dimensional analysis.	**1**	**3**

❖ **Vectors** 1- Vectors and Scalars. 2- Adding vectors : graphical methods 3- Components of vectors. 4- Adding vector: component method. 5- Multiplications of vectors. 6- Vector laws in physics.	**2**	**6**
❖ **Motion in one dimension** 1- Particles kinematics. 2- Description of motion 3- Average velocity 4- Instantaneous velocity. 5- Accelerated motion. 6- Motion with Constant Acceleration 7- Freely falling Bodies. 8- Measuring free fall acceleration.	**1**	**3**
❖ **Motion in two and three dimensions** 1- Position, velocity, and acceleration. 2- Motion with constant acceleration 3- Projectile motion 4- Uniform circular motion 5- Velocity and acceleration vectors in circular motion	**1**	**3**
❖ **Force and motion** 1- Position, velocity, and accelerations 2- Motion with constant acceleration. . 3- Newtons first and second laws. 4- Forces. 5- Newtons second law 6- Newton's third law. 7- Units of force 8- Weight and mass 9- Measuring forces 10- Applying Newton's laws.	**2**	**6**
❖ **Work and Energy** 1. Work done by constant force. 2. Work done by a variable force: one dimensional case. 3. Work done by a variable force: two dimensional case. 4. Kinetic energy and work-energy theory. 5. Power.	**1**	**3**

❖ **Fluids Statics** 1. Fluids and Solids 2. Density and pressure. 3. Variation of density in a fluid at rest. 4. Pascal Principle. 5. Archimedes' Principle. 6. Surface tension.	**1**	**3**
❖ **Fluid dynamics** 1. General concepts of fluid flow 2. Streamlines and the equation of continuity. 3. Bernoulli's Equation 4. Application of Bernoulli's Equation 5. Viscosity.	**1**	**3**
❖ **Temperature, Heat and the first law of Thermodynamics.** 1. Heat: Energy in transit 2. Heat capacity and specific heat. 3. Heat capacity of solids 4. Temperature. 5. The Celsius and Fahrenheit Scales. 6. Heat transfer.	**2**	**6**
❖ **Reflection and refraction of light at plane surface** 1. Reflection and Refraction 2. Deriving the law of refrlection 3. Image formation by plane mirrors. 4. Deriving the law of refraction. 5. Total internal reflection.	**1**	**3**
❖ **Reflection and refraction of light at plane surface** 1. Spherical mirrors 2. Spherical refracting surfaces. 3. Thin lenses 4. Compound optical systems 5. Optical instruments	**1**	**3**
❖ **Exercises and Solved problems**	**1**	**3**
	15 weeks	**45hrs**

Practical part:

1. Safety and Security at the lab.
1. Introduction to the Lab.
2. Precise measurements.
3. Vectors.
4. Determination of specific gravity.
5. Verification of Archimedes Principle.
6. Determination of Surface tension of a liquid.
7. Determination of viscosity of a liquid.
8. Determination of the melting point of wax.
9. Determination of specific heat.
10. Verification of lens formula.
11. Determination of refractive index of a Prism
12. Verification of mirrors formula.

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**		**42**			**87**
Credit	**3**		**1**			**4**

3. Additional private study/learning hours expected for students per week. **8**

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	To learn basic concepts of Physics	1- Demonstrating the basic information and principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams 3. Lecturing method: a. Board , b. Power point, 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams Discussions during the lectures.
1.2	To perform some experiments in physics	1. Discussions 2. Brain storming 3. Show the best ways to deal with problem 4. Solving problems 5. perform some experiments 6. Self-learning 7.Co-operative learning	Home work. Writing scientific Reports. Doing team research or team project. Doing team work to perform some experiments Discussions during the class.
2.0	**Cognitive Skills**		
2.1	To solve problems in Physics by using suitable mathematical principles		
3.0	**Interpersonal Skills & Responsibility**		
3.1			
3.2			
4.0	**Communication, Information Technology, Numerical**		
4.1			
4.2			
5.0	**Psychomotor**		
5.1	N. A	N. A	N. A

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			
2			
3			
4			
5			

6			
7			
8			

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)

E Learning Resources

1. List Required Textbooks
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
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.)
2. Computing resources (AV, data show, Smart Board, software, etc.)

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department
3 Processes for Improvement of Teaching
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)
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

Name of Instructor: _____

Signature: _____ Date Report Completed: _____

Name of Field Experience Teaching Staff _____

Program Coordinator:_____

Signature: _____ Date Received: _____

Level 2

Basic Computer programming skills (2) 4800153-3

Learning and studying skills 4800104-3

English (2)Technical English skills 4800171-4

Introduction to Mathematics 4800141-4 [Mathematics (2)]

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course title: Introduction to Mathematics (2) (Mathematics (2))

Course code: 4800141-4

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date : **15/3/1438**
College/Department: **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Derivative and Integral I (MATH 102) (Code: 4800141-4)**
2. Credit hours: **4 (3+1+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Physics**

   (If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course **Dr. Yousf Jaha**
5. Level/year at which this course is offered: **1st Year / Level 2**
6. Pre-requisites for this course (if any): **Intorduction to Mathematics 1 (Code: 48001410-4)**
7. Co-requisites for this course (if any): ---
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:

The mode of instruction is distributed and used only one Traditional classroom with 100%, items.

B Objectives

1. What is the main purpose for this course? The objectives of this course are to understand the rules of integration and how to apply integration theorem on different functions. Also to tease out the concepts of plane and solid geometry and their applications in polar, Cartesian and cylindrical coordinates.
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) 9- Explain strategy of the course in the beginning of the semester 10- Outlines of the Mathematical concepts, theories and the associated proofs. 11- Highlighting the day life applications whenever exist. 12- Encourage the students to see more details in the international web sites and reference books in the library. 13- Discussing some selected problems in each chapter. 14- Cooperate with different institution to find how they deal with the subject 15- Renew the course references frequently 16- Frequently check for the latest discovery in science

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

Course Description: The benchmark statement of the main learning outcomes is as follows: 7. To understand the Exponential and logarithmic functions. *8. To apply the rules of integration on partial function, .* 9. To understand the infinite series. 10. To understand Parabolas, Ellipses, Hyperbolas, and rotation of axes. 11. To understand plane curves and polar coordinates. *12. To understand how to describe vectors in cartesian and spherical and cylindrical coordinates.* *13. The students should be trained on physical and generic skills (knowledge – cognitive – interpersonal – communication – problem solving – IT)* The overall goal is to know how to apply the Mathematical method to solve some problems and to understand the enormous variety of differentiation and integration techniques in terms of a few relatively

simple laws

1 Topics to be Covered :-		
Topics	No of Weeks	Contact hours
2- Exponential and Logarithmic Functions		
7- Inverse Functions	1	1.5
8- The Natural Logarithmic function		1.5
9- The Natural exponential function		1
10- Differentiation and Integration	1	1.5
11- General Exponential and Logarithmic function		1.5
12- Derivative of inverse functions		1
2- Additional Techniques and Applications		
7- Integration by Parts.	1	1.5
8- Trigonometric Integrals and substitutions .		1.5
9- Partial Functions		1
10- Quadratic Experssions.	1	1.5
11- Miscellaneous Substitutions		1.5
12- Moments and centroids of plane regions		1

3- Infinite Series		
7- Infinite sequences	1	1.5
8- Convergent of Divergent infinite series.		1.5
9- Positive Term series		1
10- Alternating series.	1.5	1
11- Absolute Convergence.		1
12- Power Series		1
13- Power Series Representations of functions		1
14- Taylor and Maclaurin Series.		1
15- The Bionomial Series.		1
4- Topics in Analytic Geometry		
9- Conic Sections	1.5	2
10- Parabolas		1
11- Ellipses		1
12- Hyperbolas		1
13- Rotation of Axes		1
5- Plane Curves and Polar Coordinates		
7- Plane curves.	1	1
8- Tangent lines to Curves		1
9- Polar Coordinate systems		1
10- Polar Equations of Conics		1
11- Areas in Polar Coordinates.	1	1

12- Lengths of Curves.		1
13- Surfaces of Revolution.		2
6- Vectors and Solid Analytic Geometry		
1- Vectors in Two Dimensions	1	1
2- Rectangular Coordinate Systems in three dimensions.		1
3- Vectors in three dimensions		2
4- The vector product.	1	1
5- Lines in Space		1
6- Planes		2
7- Cylinders and Surfaces of Revolution.	1	1
8- Quadric Surfaces		1
9- Cylindrical and Spherical Coordinate system.		2

Practical part:

NIL

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**60**	**-**	**-**	**-**	**-**	**60**
Credit	**4**	**-**	**-**	**-**	**-**	**4**

3. Additional private study/learning hours expected of students per week.	**8**

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	*(i) Knowledge that students should know and understand when they complete the course are as follows:* *(vi) Learning fundamentals in Exponential and Logarithmic functions.* *(vii) Understanding the integration techniques for special function.* *(viii) Understanding*	13. Demonstrating the basic information and principles through lectures and the achieved applications 14. Discussing phenomena with illustrating pictures and diagrams 15. Lecturing method: a. Blackboard b. Power point c. e-learning 16. Tutorials 17. Revisit concepts 18. Discussions 19. Brain storming sessions *20. Start each chapter by general idea and the*	6. Solve some example during the lecture. 7. Exams: a) Quizzes b) Short exams (mid term exams) c) Long exams (final) d) Oral exams 8. Discussions with the students. 9. Ask the student to clear the misunderstanding of some mathematical principle. 10. Ask quality question.

	infinite Series. *(ix) Understanding Analytic Geometry.* *(x) Understanding polar and cylindrical coordinate.* *(xi) Improving logical thinking.* *(xii) To use mathematical formulation to describe the physical principle or phenomena* (xiii) Ability to describe the phenomena mathematically.	*benefit of it;* *21. Learn the student background of the subject;* *22. Show the best ways to deal with problem;* *23. Keep the question "why" or "how" to explain always there;* *24. Build a strategy to solve problem.*	
2.0	**Cognitive Skills**		
2.1	6. How to use mathematical laws and principles to understand the subject 7. How to simplify problems and analyze phenomena *8. Analyse and explain natural phenomena.* *9. Ability to explain the idea with the student own words.* 10. Represent the problems mathematically.	8. Preparing main outlines for teaching 9. Following some proofs *10. Define duties for each chapter* 11. Home work assignments *12. Encourage the student to look for the information in different references* *13. Ask the student to attend lectures for practice solving problem* *14. Ask the student to do small research.*	5. Midterm's exam. Exams, short quizzes 6. Asking about mathematical laws previously taught 7. Writing reports on selected parts of the course 8. Discussions of how to simplify or analyze some phenomena

3.0	**Interpersonal Skills & Responsibility**		
3.1	Work independently. The students learn independently and take up responsibility.	6. Learn how to search the internet and use the library. 7. Learn how to cover missed lectures. 8. Learn how to summarize lectures or to collect materials of the course. 9. Learn how to solve difficulties in learning: solving problems – enhance educational skills. 10. Develop her interest in Science through :(lab work, field trips, visits to scientific and research. Encourage the student to attend lectures regularly by: Giving bonus marks for attendance Assigning marks for attndance. Give students tasks of duties	6. Quizzes on the previous lecture 7. Checking report on internet use and trips 8. Discussion *9. The accuracy of the result gained by each group will indicate good group work* *10. Presenting the required research on time and the degree of the quality will show the sense of responsibility.*
4.0	**Communication, Information Technology, Numerical**		
4.1	5. Computation 6. Problem solving 7. Data analysis and interpretation. 8. Feeling mathematical	*12. Know the basic mathematical principles.* 13. Use the web for research.	*6. Their interaction with the lectures and discussions.*

	reality of solving problems.	14. *Discuss with the student.* 15. *Exams to measure the mathematical skill.* 16. Clear the weakness point that should be eliminated. 17. *Encourage the student to ask for help if needed.* 18. Computational analysis. 19. Data representation. 20. *Lectures for problem solution.* 21. Encourage the student to ask good question to help solve the problem. 22. Display the lecture note and homework assignment on the web.	7. The reports of different asked tasks. 8. *Homework, Problem solutions assignment and exam should focus on the understanding.* 9. Results of computations and analysis. 10. Comments on some resulting numbers.
5.0	**Psychomotor**		
5.1	N/A	N/A	N/A

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	Exercises & Home works, Participation in activities lectures and in-class problem solving.	All weeks	20 %
2	1st Class Test Exam	8th week	15 %
3	2nd Class Test Exam	11th week	15%
4	Final Exam	16th week	50%

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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks

[Calculus with analytic Geometry, E. Swokowski, PWS Publishers, 1983.

[2] Calculus with analytic Geometry, Edwin J. Purcel Prentice-Hall, 1984.

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

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

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

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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board. There are enough laboratories for experimental physics, provided with air conditions, good data show, and experimental equipment.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each classroom and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching
• Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department
• Revision of student answer paper by another staff member. • Analysis the grades of students.
3 Processes for Improvement of Teaching
• Preparing the course as PPT. • Using scientific flash and movies. • Coupling the theoretical part with laboratory part • Periodical revision, of course content.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department.
- Feedback evaluation of teaching from independent organization.
- Independent evaluation by another instructor that give the same course in another faculty.
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

3- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

4- According to point 1 the plan of improvement should be given.

Name of Instructor: _____ **Dr. Yousf Jaha** _____

Signature: _____ Date Report Completed: _____

Name of Field Experience Teaching Staff _____

Program Coordinator:_____

Signature: _____ Date Received: _____

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Course title: Technical English Language

Course code: 4800171 – 6

This form Compatible with NCAAA 2013 Edition

Course Specifications

Umm Al-Qura University

English Language Center

English Language for Students of the Department of Physics

1. Basic Information

1. COURSE TITLE: **English Language for Physicist** ■ □	2. COURSE NUMBER: **4800171 – 4**
3. Course ■ Required □ Elective	4. Number of Credits: **3**
6. COURSE PEEQUISITES: **English Language 4800170 – 6**	5. Number of Contact Hours: **Eight hours a week for a total of 45 hours per semester**
7. COURSE TIME: **First Year /2nd Semester**	

2. Course Description

This course is designed for the first-year students of the Department of islamic Architecture. The course offers discipline-specific contextualized vocabulary and follows an integrative approach to enhancing language skills. Activities in this course are based on realistic reading passages and

real-life conversations, which are then used to introduce the context specific vocabulary, grammatical structure and discourse features, leading to a number of written and oral productions. Upon successful completion of the course students are expected to master basic jargon and technical terms in architecture as well as have a modest command of English. Furthermore, they are expected to possess the skills necessary to read and understand level-appropriate texts on architecture, as well as listen to and understand subject-specific and level-appropriate lectures on architecture.

Students are evaluated as follows:

1. Active participation, attendance, submitting on time finished assignments: 20%

2. Midterm Exam: 30%

3. Final Exam: 50%

3. Architecture: Course Delivery Plan

Coverage of Planned Program *Weekly Instruction: 8 hours; Total: Semester Instruction: 128 hr*		
Week No.	**Unit / topic***	**Planned Hours**
Week 1	**An introduction to the course**	**8**
Week 2	**Parts of a Building 1**	**8**
Week 3	**Parts of a Building 2**	**8**
Week 4	**Shapes 1**	**8**
Week 5	**Shapes 2**	**8**
Week 6	**Describing Shapes and**	**8**
Week 7	**Describing Landscapes**	**8**
Week 8	**Basic Math**	**8**
Week 8: Last meeting: Midterm Exam		
Week 9	**Measurements 1**	**8**
Week 10	**Measurements 2**	**8**
Week 11	**Materials 1**	**8**
Week 12	**Materials 2**	**8**
Week 13	**Describing Materials**	**8**
Week 14	**Education 1**	**8**
Week 15	**Education 2**	**8**
Week 16	**Revision**	**8**
Week 16: Last meeting: Final Exam		

Level 3

403243-2 Method in Theoritical Physics1

605101-2 The Holy Qur'aan I

401102-2 Biology I. Zoology

403200-4 General Physics II

402101-4 General Chemistry

401211-4 Cell Biology

601101-2 Islamic Culture I

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title: Classical Physics

Course Coordinator: Dr. B. A. Korany

Course code: 403200-4

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date : **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Classical Physics (Code: 403200-4)**
2. Credit hours: **4 (3+1+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Medical Physics**
(If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course
B. A. Korany
5. Level/year at which this course is offered: **Level 3/2nd Year**
6. Pre-requisites for this course (if any): **General physics 4031101-4**
7. Co-requisites for this course (if any): **NIL**
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:
The mode of instruction is distributed and used only one Traditional classroom with 100%, items.

B Objectives

1. What is the main purpose for this course?

The main purpose of the course to covering some advanced physics principles in mechanics and electricity and magnetism, such as particle dynamics, system of particles, collisions, rotational kinematics, rotational dynamics, oscillations, electric field, electric potential, electric current, magnetic field, etc. This course will provide a conceptual and experimental background in physics sufficient to enable students to take courses that are more advanced in related fields.

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)

17- From using the E-learning web based in the university web site, the students improve their IT skill
18- Outlines of the physical laws, principles and the associated proofs.
19- Highlighting the day life applications whenever exist.
20- Encourage the students to see more details in the international web sites and reference books in the library.
21- Encourage the student to build an example of different experiments related to the course
22- Frequently check for the latest discovery in science

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

Course Description:

The main purpose of the course to covering some advanced physics principles in mechanics and electricity and magnetism, such as particle dynamics, system of particles, collisions, rotational kinematics, rotational dynamics, oscillations, electric field, electric potential, electric current, magnetic field, etc. This course will provide a conceptual and experimental background in physics sufficient to enable students to take courses that are more advanced in related fields.

1 Topics to be Covered

Topics	No of Weeks	Contact hours
❖ ***Collisions*** 1- What is collisions? 2- Impulse and momentum. 3- Conservation of momentum during collision. 4- Collisions in one dimension. 5- Two dimensional collisions. 6- Center of mass reference frame. 7- Spontaneous decay process. .	**1**	**3**

❖ ***Rotational Kinematics*** 1- Rotational motion. 2- Rotation variables. 3- Rotation with constant angular acceleration. 4- Rotational quantities as vectors. 5- Relationship between linear and angular variables: scalar form. 6- Relationship between linear and angular variables: vector form.	**1.5**	**4**
❖ ***Rotational dynamics*** 6. Rotational dynamics 7. Kinetic energy of rotation and rotational inertia. 8. Rotational inertia of solid bodies 9. Rotational dynamics of rigid body 10. Combined rotational and translational motion.	**1**	**3**
❖ ***Angular momentum*** 1- Angular momentum of a particle 2- System of particles 3- Angular momentum and angular velocity 4- Conservation of angular momentum 5- The spinning top. 6- Quantization of angular momentum.	**1**	**3**
❖ ***Equilibrium of Rigid bodies*** 1- Condition of equilibrium. 2- Center of Gravity. 3- Examples of equilibrium. 4- Stable, unstable, and Neutral equilibrium or rigid bodies in a gravitational field. 5- Elasticity.	**1**	**3**
❖ ***Oscillations.*** 7. Oscillating systems. 8. The simple harmonic oscillator. 9. Simple harmonic motion 10. Energy considerations in simple harmonic motion. 11. Applications of simple harmonic motion 12. Simple harmonic motion and uniform circular motion. 13. Combinations of harmonic motions 14. Damped harmonic motions 15. Forced harmonic motions. .	**1.5**	**4**

❖ ***Electric Charge*** 16. Electric Charge 17. Conductors and Insulators 18. Coulomb' Law 19. Charge is Quantized	**1**	**3**
❖ ***Electric Field*** 20. Field 21. Electric Field E 22. The Electric Field of Point Charge 23. Lines of Force 24. The Electric Field of continuous Charge Distribution 25. (Ring of Charge) 26. A Point Charge in an Electric Field	**1**	**3**
❖ ***Gauss 'Law*** 27. The Flux of a Vector Field 28. The Flux of the Electric Field 29. Gauss' Law 30. A Charged Isolated Conductor 31. Application of Gauss's Law : Infinite Sheet of Charge	**1**	**3**
❖ ***Electric potential*** 32. Electric Potential Energy 33. Electric Potential 34. Calculating the Potential from the Field 35. Potential Due to a Point Charge 36. Potential Due to a Collection of Point Charges 37. The Electric Potential of Continuous Charge Distribution 38. Equipotential Surfaces 39. Calculating the Field from the Potential	**1**	**3**
❖ ***Capacitance And Dielectric*** 40. Capacitance 41. Calculating the Capacitance (of a Parallel-Plate Capacitor only) 42. Capacitor in Series and Parallel 43. Energy Stored in an Electric Field 44. Capacitor with a Dielectric	**1**	**3**
❖ ***Current And Resistance*** 45. Electric current 46. Current Density 47. Resistance, Resistivity and Conductivity 48. Ohm's Law 49. Energy Transfers in an Electric Circuits	**1**	**3**

❖ ***De Circuits*** 50. Electromotive Force 51. Calculating the Current in a Single Loop 52. Potential Differences 53. Resistance in Series and Parallel 54. Multiloop Circuits 55. RC Circuits	**1**	**3**
❖ ***Magnetism*** 56. The Magnetic Field B 57. Magnetic Force on a Moving Charge 58. Circulating Charges 59. Magnetic Force on a Current 60. Magnetic field lines 61. The magnetic force on moving charges 62. Magnitude of the magnetic force, F 63. Magnitude of the magnetic field, B 64. Magnetic force Right-Hand Rule (RHR) 65. III- The motion of charged particles in a magnetic field 66. Electric versus Magnetic Forces 67. Constant-velocity, straight-line motion 68. Circular motion 69. IV- The magnetic force exerted on a current-carrying wire 70. V- Loops of current and magnetic torque 71. VI- Electric currents, magnetic fields and Ampere´s law ***Solved problems***	**1**	**3**
	15 weeks	**45 hrs**

Practical part:

1. Safety and Security at the lab.
2. Introduction.
3. Simple Pendulum.
4. Torque pendulum
5. Verification of Hook's law.
6. Moment of inertia of rigid body.
7. Projectiles

8. Determination of sound velocity in air.

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	**-**	**42**	**-**	**-**	**87**
Credit	**3**	**-**	**1**	**-**	**-**	**4**

3. Additional private study/learning hours expected of students per week.	**6**

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 physical quantities, physical phenomena, and basic principles.	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: Board, Power point. 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Discussions during the lectures Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams .
1.2	Describe the physical laws and quantities using mathematics		
1.3	Determine the physical quantities at the Lab.	1. Doing team research or team project. 2.Doing team work to perform some experiments	Writing scientific Reports. Lab assignments Exam.

		3. Perform the experiments correctly. 4. Demonstrate the results correctly. 5. Write the reports about the experiment. 6. Discussion with the student about the results	
2.0	**Cognitive Skills**		
2.1	Apply the laws of physics to calculate some quantities.	1. Preparing main outlines for teaching. 2. Following some proofs. 3. Define duties for each chapter 4. Encourage the student to look for the information in different references. 5. Ask the student to attend lectures for practice solving problem.	1. Exams (Midterm, final, quizzes) 2. Asking about physical laws previously taught 3. Writing reports on selected parts of the course. 4. Discussions of how to simplify or analyze some phenomena.
2.2	Solve problems in physics by using suitable mathematics.		
2.3	Analyse and interpret quantitative results.		
2.4	Apply physical principle on day life phenomena.		
2.5	Derive the physical laws and formulas.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-learning to be aware with recent developments in physics	• Search through the internet and the library. • Small group discussion. • Enhance self-learning skills. • Develop their interest in Science through : (lab work, visits to scientific and research institutes).	• Evaluate the efforts of each student in preparing the report. • Evaluate the scientific reports. • Evaluate the team work in lab and small groups. • Evaluation of students presentations.
3.2	Work effectively in groups and exercise leadership when appropriate.		
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form.	• Incorporating the use and utilization of computer, software, network and multimedia through courses • preparing a report on some topics related to the course depending on web sites	• Evaluating the scientific reports. • Evaluating activities and homework
4.2	Collect and classify the material for the course.		
4.3	Use basic physics terminology in English.		
4.4	Acquire the skills to use the internet communicates tools.		
5.0	**Psychomotor**		
5.1	Use experimental tools safely and correctly.	Follow up the students in lab and during carryout all experimental work.	• Practical exam. • Giving additional marks for the results with high and good accuracy
5.2	Determine the physical quantity correctly at the Lab.		

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	Exercises & Home works, Participation in activities, lectures and labs	Weekly	10 %
3	Midterm Exam	8th	20%
4	Lab. Reports	Weekly	5%
5	Practical Lab Final Exam	15th	15%
6	Final Exam	16th -17th	50%

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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (4hrs per week)

E Learning Resources

1. List Required Textbooks
Physics, 4th edition , By: Halliday, Resnick, and Krane, Wiley (1992)

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

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
Physics, 4th edition , By: Halliday, Resnick, and Krane, Wiley (1992)
Physics , 4th edition, By: J. Walker (2010)

4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
www.uqu.sa/baewiss

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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board. There are enough laboratories for experimental physics, provided with air conditions, good data show, and experimental equipment.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Revision of student answer paper by another staff member. • Analysis the grades of students.
3 Processes for Improvement of Teaching • Preparing the course as PPT. • Using scientific flash and movies. • Coupling the theoretical part with laboratory part • Periodical revision of course content.
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) • The instructors of the course are checking together and put a unique process of evaluation. • Check marking of a sample of papers by others in the department. • Feedback evaluation of teaching from independent organization. • Independent evaluation by another instructor that give the same course in another faculty. • Evaluation by the accreditation committee in the university.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. 5- The following points may help to get the course effectiveness • Student evaluation • Course report • Program report • Program Self study

6- According to point 1 the plan of improvement should be given.

Name of Instructor: _____B. A. Korany_____

Signature: Date Report Completed: 23/4/1439

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Alluqmani

Signature: Saleh Date Received: 23/4/1439

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title:
Theoretical Methods in Physics (1)

Course Coordinator:
Dr. Mohamed M. Sabry

Course code: 403200-4

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date : **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Theoretical Methods in Physics (1) (Code: 403243-2)**
2. Credit hours: **2 (2+0+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Medical Physics**
(If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course
Mohamed M. Sabry
5. Level/year at which this course is offered: **2nd Year / Level 4**
6. Pre-requisites for this course (if any): **Differentiation and Integration (2) (4042501-4)**
7. Co-requisites for this course (if any): **NIL**
8. Location if not on main campus: **Main campus and Alzaher**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	√	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:
The mode of instruction is distributed and used only one Traditional classroom with 100%, items.

B Objectives

1. What is the main purpose for this course? This course is designed to demonstrate and consolidate the different concepts of mathematics and algebra and ways of using them in the different branches of physics
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) Encourage students to practice in the basics of mathematics and algebra – like differentiation and integration, limits, related to the course

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

Course Description:
The course provides a direct preparation for an advanced study in theoretical physics and is also an interesting element in the education of an experimental physicist. The physical principles behind the mathematical models are stressed so that insight and problem solving ability become primary. This course will cover the basic mathematical tools used in physical science and engineering: Vector analysis, partial differentiation, power and series, differential equations, special functions, integral transforms, and complex analysis. The course is designed to supply students for a variety of mathematical methods that need for advanced undergraduate and beginning graduate study in physical science and to develop a solid background for those who will continue into the mathematics of advanced theoretical physics

1 Topics to be Covered

Topics	No of Weeks	Contact hours
❖ **Vector Analysis** 8- Triple (Scalar-Vector) products- 9- Differentiation of vectors- 10- grad, Div, Curl and Laplace's operator, 11- Vector integral- 12- Green's, Gauss' and Stokes theorems, 13- General curvilinear coordinates- 14- vector operators in orthogonal curvilinear coordinates	**4**	**8**
❖ **Infinite series, Power series** **7-** Geometric series, **8-** testing series for convergence, **9-** Alternating series, **10-** interval of convergence- **11-** expanding functions in power series, **12-** Taylor and Maclaurin expansions, **13-** Solving Problems about Series	**3**	**6**

❖ **Partial Differentiation** 9- Total differentials- 10- Approximating using differentials, 11- chain rule 12- Implicit differentiation, A 13- Application to Maximum and Minimum problems, 14- Lagrange Multipliers, Change of Variables, 15- Differentiation of Integrals	**4**	**8**
❖ **Ordinary differential equations** 1- First order differential equations; 2- separable differential equations, 3- linear 1st order equations, 4- 2nt order differential equations; 5- Homogeneous differential equations, 6- Non-homogeneous differential equations.	**3**	**6**
	15 weeks	**30 hrs**

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**30**	**-**	**-**	**-**	**-**	**40**
Credit	**2**	**-**	**-**	**-**	**-**	**2**

3. Additional private study/learning hours expected of students per week. **4**

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 physical quantities, physical phenomena, and basic principles.	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: Board, Power point. 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Discussions during the lectures Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams .
1.2	Describe the physical laws and quantities using mathematics		
2.0	**Cognitive Skills**		
2.1	Apply the laws of physics to calculate some quantities.	1. Preparing main outlines for teaching. 2. Following some proofs. 3. Define duties for each chapter 4. Encourage the student to look for the information in different references. 5. Ask the student to attend lectures for practice solving problem.	1. Exams (Midterm, final, quizzes) 2. Asking about physical laws previously taught 3. Writing reports on selected parts of the course. 4. Discussions of how to simplify or analyze some phenomena.
2.2	Solve problems in physics by using suitable mathematics.		
2.3	Analyse and interpret quantitative results.		
2.4	Apply physical principle on day life phenomena.		
2.5	Derive the physical laws and formulas.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-learning to be aware with recent developments in physics	• Search through the internet and the library. • Small group discussion. • Enhance self-learning skills. • Develop their interest in Science through : (lab work, visits to scientific and research institutes).	• Evaluate the efforts of each student in preparing the report. • Evaluate the scientific reports. • Evaluate the team work in lab and small groups. • Evaluation of students presentations.
3.2	Work effectively in groups and exercise leadership when appropriate.		
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form.	• Incorporating the use and utilization of computer, software, network and multimedia through courses	• Evaluating the scientific reports. • Evaluating activities
4.2	Collect and classify the material for the course.		
4.3	Use basic physics terminology in English.		

4.4	Acquire the skills to use the internet communicates tools.	• preparing a report on some topics related to the course depending on web sites	and homework
5.0	**Psychomotor (NA)**		

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	Exercises & Home works, Participation in activities lectures, labs and an essay (single or in group)	Weekly	20 %
3	1st Class Test Exam	7th	15%
4	2nd Class Test Exam	14th	15%
5	Final Exam	16th – 17th	50%

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)

Students are supervised by academic advisers in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks

1- Mary L. Boas, Mathematical methods in the Physical sciences, second edition, John Wiley and Sons (1966) and (1983).
2- G. Dennis Zill, R. Michael Cullen, Advanced engineering mathematics, Jones and Bartlett Publisher (2006), ISBN 9780763745912.
3- Eugene Butkov, Mathematical Physics, World student series edition (1973)

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

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

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

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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Revision of student answer paper by another staff member. • Analysis of the grades of students.
3 Processes for Improvement of Teaching • Preparing the course as PPT. • Coupling the theoretical part with real physics problems • Periodical revision of course content.
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) • The instructors of the course are checking together and put a unique process of evaluation. • Check marking of a sample of papers by others in the department. • Feedback evaluation of teaching from independent organization. • Independent evaluation by another instructor that give the same course in another faculty. • Evaluation by the accreditation committee in the university.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. 7- The following points may help to get the course effectiveness • Student evaluation • Course report • Program report • Program Self study

8- According to point 1 the plan of improvement should be given.

Name of Instructor: Mohamed M.Sabry_____

Signature: Date Report Completed: 23/4/1439

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Alluqmani

Signature: Saleh Date Received: 23/4/1439

ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

COURSE SPECIFICATION

General Chemistry 1

4021011-4

1436 / 1437 H

Course Specification

Institution: Umm Al-Qura University
College/Department: Faculty of Applied Sciences / Chemistry Department

A. Course Identification and General Information

1. Course title and code: General Chemistry 1, 4021011-4
2. Credit hours: Four (3 theoretical + 1 practical) hrs.
3. Program(s) in which the course is offered (If general elective available in many programs indicate this rather than list programs): • **Chemistry** • **Industrial Chemistry** • **Physics** • **Medical Physics** • **Biology** • **Microbiology** • **Mathematics**
4. Name of faculty member responsible for the course: Prof. Mohamed Ismail Awad
5. Level/year at which this course is offered: 1st / 1
6. Pre-requisites for this course (if any): ---------
7. Co-requisites for this course (if any): ---------
8. Location if not on main campus: ----------

B. Objectives

1. Summary of the main learning outcomes for students enrolled in the course. This course is an introductory chemistry course designed to prepare students for college level chemistry courses. The course introduces some basic principles of physicl, organic and inorganic chemistry.
2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field). • The use of teaching intelligent classes for lectures. • Encourage students to prepare reports in general topics in chemistry. • The use of information technology or the Internet in order to increase awareness of the concepts of chemistry.

• Link the theoretical and practical sides of the course to help the students to understand and interpret the properties of the chemical compounds.

C. Course Description: (Note: General description in the form to be used for the Bulletin or Handbook should be attached).

1. Topics to be Covered		
Topic	No of Weeks	Contact hours
Units of measurements; SI- units, intensive and extensive properties, uncertainty in measurements (precision and accuracy).	1	3
Significant figures: Rounding significant figures, Using significant figures in addition, subtraction, multiplication and divisions.	1	3
States of matter and measurement, molecules and molecular compounds.	2	6
The periodic table, nomenclature, electronic structure of atoms, simple periodic properties of the elements.	2	6
Chemical bonding, molecular geometry, and properties of various states of matter.	1	3
Ions and ionic compounds, chemical reaction types.	1	3
Stoichiometry, atomic and molecular weights.	1	3
The mole, simple quantitative calculations with chemical reactions.	1	3
Basics of chemical equilibrium.	1	3
Acids and bases.	1	3
Thermochemistry.	1	3
Hydrocarbons, nomenclature and simple reactions.	1	3

Laboratory Experiments Outline

Topics to be Covered		
List of Experiments The practical part includes the following experiments:	No of Weeks	Contact hours
Introduction	**1**	**3**
Density and viscosity of liquids.	**1**	**3**
Compound type (polar – nonpolar – ionic).	**1**	**3**
Chemical reactions.	**1**	**3**
Acids and bases and pH measurements and calculations.	**1**	**3**
Titration of vinegar.	**1**	**3**
Oxidation-reduction reactions.	**1**	**3**
Molar mass of acid.	**1**	**3**
Qualitative analysis (acidic and basic radicals).	**1**	**3**

Collegative properties (determination of molecular weight).	**1**	**3**
Determination of the heat capacity of the calorimeter.	**1**	**3**
Determination of the critical solution temperature of phenol - water system	**1**	**3**
Review	**1**	**3**
Final Exam.	**1**	**3**

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

Lecture:	Tutorial:	Practical/Fieldwork/Internship:	Other:
42	---	**42**	

3. Additional private study/learning hours expected for students per week. (This should be an average: for the semester not a specific requirement in each week)
- 28 hours (2 hrs per week office hrs).

4. Development of Learning Outcomes in Domains of Learning
For each of the domains of learning shown below indicate:
A brief summary of the knowledge or skill the course is intended to develop;
A description of the teaching strategies to be used in the course to develop that knowledge or skill.
The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

Knowledge

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0			
1.1	Knows International system of units	Lectures Scientific discussion Library visits Web-based study	Exams portfolios long and short essays posters lab manuals
1.2	Familiar with the laws that describe the behavior of ideal gases.		
1.3	Knows atom structure		
1.4	Describe types of solids.		
1.5	Mention the first law of thermodynamics.		
1.6	List the factors affecting equilibrium position and equilibrium concentration.		
2.0	Cognitive Skills		
2.1	Summarize gases laws	Lectures Scientific discussion homework assignment containing problem thinking activities	1. Midterm exam 2.quizzes 3.Final exam
2.2	Compare between ideal and real gases		
2.3	Apply Hess's law for the calculation of heat of reaction.		
2.4	Apply Faraday's laws for calculating the amount deposited at electrodes		

2.5	Predict the spontaneity of chemical reaction.		
3.0	Interpersonal Skills & Responsibility		
	• Manage resources, time and collaborate with members of the group. • Ability to work independently to handle Chemicals and perform laboratory illustrations safely. • Ability to communicate results of work to classmates. • Ability to work in a team to perform a specific task	Team work groups General discussion with students for solving a problrm.	Assessment of the solution problems submitted by the students.
4.0	Communication, Information Technology, Numerical		
	• Work effectively both in a team, and independently on solving chemistry problems. • Communicate effectively with his lecturer and colleagues • Use university library and web search engines for collecting information and search about different topics .	Write a Report Use libraries	Evaluation of the report presented
5.0	Psychomotor		
5.1	NOT APPLICABLE		
5.2			

5. Schedule of Assessment Tasks for Students During the Semester:			
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1	Class activities, Attendances and Duties	Throughout the Term	10%
2	Mid-Term Exam (s)	5-14	20%
3	Lab Activity and Final Exam on Lab	Throughout the Term	30%
4	Final Exam	End of the Term	40%
5	Total		100%

D. Student Support

1. Arrangements for availability of faculty for individual student consultations and academic advice. (include amount of time faculty are available each week)
Presence of faculty members to provide counselling and advice.
Office Hours: weekly during working hours, and to create appropriate means.
Academic Advising for students to those who need it, and taking into account the appropriate test for that Member.

E Learning Resources

1. Required Text(s)
P. Atkins and J. de Paula, Physical Chemistry, 10th ed., 2006, New York.

2. Essential References B. S. Bahl, Essential of physical chemistry, S. Chand & Co. , 1995, New Delhi, India. G. Rakshi, Physical Chemistry, 1995. J. E. Brady, and J. E. Humiston, General Chemistry Principles and Structure, 5th edition, 1990, JohnWiley &Sons.
3. Recommended Books and Reference Material (Journals, Reports, etc) (Attach List) Chemistry, R. Chang, 10th Edition, McGraw-Hill Higher Education, 2011.
4. Electronic Materials, Web Sites etc Power point lectures.
5. Other learning material such as computer-based programs/CD, professional standards Microsoft PowerPoint, Microsoft Word

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Lecture rooms, laboratories, etc.) Classroom capacity (60) students. To supply the classrooms with the appropriate educational means.
2. Computing resources Hall is equipped with a computer and Data Show and TV.
3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list) None

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching Complete the questionnaire evaluation of the course in particular. **Assess the progress of the operation by the students using the evaluation forms or group discussion in order to reach weaknesses and processed.**
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor **Observations and the assistance of colleagues.** **Independent evaluation for extent to achieve students the standards.** **Iindependent advice of the duties and tasks.**
3 Processes for Improvement of Teaching • Workshops for teaching methods. • Continuous training of member staff. • Review of strategies proposed. • Providing new tools for learning. • The application of e-learning. • Exchange of experiences internal and external.

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)

- Check marking of a sample of exam papers, or student work.
- Exchange corrected sample of assignments or exam basis with another staff member for the same course in other faculty.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Periodic Review of the contents of the syllabus and modify the negatives.
- Consult other staff of the course.
- Hosting a visiting staff to evaluate of the course.
- Workshops for teachers of the course.

Faculty or Teaching Staff: **Professor Mohamed Awad**

Signature: **Date Report Completed: March 2016**

Received by: Dr Hatem Altass **Department Head**

Signature: _____ **Date: _____**

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title: Cell Biology

Course Coordinator: Prof. Gamal Osman

Course code: 403280-4

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Cell Biology (code: 403200-4)**
2. Credit hours: **4 (3+1+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Medical Physics.**

   (If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course

   Prof. Dr. Ahmed Yahia
   Prof. Dr. Gamal Osman
5. Level/year at which this course is offered: **Level 3/ 2nd Year**
6. Pre-requisites for this course (if any): **404102**
7. Co-requisites for this course (if any): **NIL**
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:

The mode of instruction is distributed and used only one Traditional classroom with 100%, items.

B Objectives

1. What is the main purpose for this course?

The course aims at introducing the characteristics of the Kingdom of prokaryotes and through a detailed study of external structures and internal bacterial cell, and a brief study of the characteristics of the Kingdom of eukaryotes through a detailed study of external structures and internal eukaryotic cells with giving an overview of the foundations of cell division and the role of abnormal cells in causing cancer, and also an introduction to the study of stem cells and their most important uses in medical and therapeutic aspects.

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)

Add the following topics and reference

1-Cooperate with other educational institutions to find how they deal with the subject.

2- Re- new the course references frequently.

3-Frequently check the latest discovery in science to improve the course objectives.

4- The course needs the use of computers.

5- Posting some course material on the websites to help the students.

6- Focusing on generic skills.

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

Course Description:

This course aims to give the student an idea of prokaryotes and Eukaryotes and the differences between them

1 Topics to be Covered

Topics	No of Weeks	Contact hours
Historical introduction to cell biology and development that went through this science.	1	1
An overview of the taxonomic status of the bacteria within the living organisms. A brief description of the most important differences between bacteria and eukaryotic cells	2	1
Introduction to the external and internal structures of the bacterial cell and the functions of these structures	2	1
Gene cloning.	1	1

1st Class Test		
The exact installation of the cell, the cell wall installation the functions of the cell wall and the rest of the different organelles.	1	1
The exact composition of the plasma membrane and functions	1	1
ultrastructure eukaryotic cells	2	2
Appendages poetic and precise composition and functions comparison between the appendages and flagella appendages noodles	2	1
The exact composition of bacterial cell cytoplasm and its contents 2nd Class Test	2	1
	15 weeks	45 hrs

Practical part:

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	45	-	42	-	-	87
Credit	3	-	1	-	-	4
3. Additional private study/learning hours expected of students per week.				6		

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	Upon successful completion of this course, the student to: identify the most important characteristics of the bacterial cell and the difference between them and the animal and plant cells.	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams 3. Lecturing method: Board, Power point 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Periodical exam and reports 10%
1.2	understand the different functions the external and internal structures of the bacterial cell and the role of these structures to make the bacterial cell capable of causing disease, or spoilage of food or used in various industries		Mid- term theoretical exam 20%
	understand how cancer occurs.		
	identify the stem cells and the most important medical and therapeutic uses		
2.0	**Cognitive Skills**		
2.1	thinking and give information about the importance of cells in life give information about the function of cells. The differences between eukaryotic and prokaryotic cells	1. Through lectures, videos and some laboratory experiments which introduced to the students to enable them to understand the is the cell biology Demonstrate the different types of cells.	1 Exam must contain questions that can measure these skills.
3.0	**Interpersonal Skills & Responsibility**		

3.1	student should be able to obtain knowledge by himself from different sources the student is encouraged to work in a team.	Open class discussions with students for minutes during lectures and labs. Students (as groups and individuals) should give reports concerning certain topics of the course.	Evaluate the efforts of each student in preparing the report. • Evaluate the scientific values of reports.
4.0	**Communication, Information Technology, Numerical**		
4.1	Enhancing the ability of students to use computers and internet.	Homework (preparing a report on some topics related to the course depending on web sites).	• Evaluate the efforts of students in preparing the reports and referring the references.
5.0	**Psychomotor**		
5.1	N. A	N. A	N. A

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, quizzes, unsolved problems, oral presentation, class discussion and case study and an essay (single and/or group project, and poster).	Weekly	10%
2	1st Class Test Exam	7th	10%
3	2nd Class Test Exam	13th	10%
4	Final Practical Exam & Lab. Reports.	15th	20%
5	Final Exam	16th-17th	50%

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)

Each student will supervise by an academic adviser in physics Department and the time table for academic

advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks 1-)- Mummery,C. Wilmut,L. Van de Stolpe,A. Roelen,B.A.J. (2011) Stem Cells Scientific Facts and Fiction. Academic Press. • (2)- Rastogi, S.C. (2005) Cell Biology 3th edition. New Age International Publishers.
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
http :// www.springer.com http:// www.sciencedirect.com
http:// www.gigabedia .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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board. There are enough laboratories for experimental physics, provided with air conditions, good data show, and experimental equipment.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each classroom and laboratories, there is a data show, and board.

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

Each Classroom and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Course reports
- Course evaluation.

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Revision of student answer paper by another staff member.
- Analysis the grades of students.

3 Processes for Improvement of Teaching

- Preparing the course as PPT.
- Using scientific flash and movies.
- Coupling the theoretical part with laboratory part
- Periodical revision of course content.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department.
- Feedback evaluation of teaching from independent organization.
- Independent evaluation by another instructor that give the same course in another faculty.
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

According to point 1 the plan of improvement should be given.

Name of Instructor: _____R. A. Hassan_____

Signature: Date Report Completed: 23/4/1439

Name of Field Experience Teaching Staff _____

Program Coordinator:

Signature: Date Received: 23/4/1439

المؤسسة: جامعة أم القرى
كلية الدعوة وأصول الدين
قسم الدعوة والثقافة الإسلامية

توصيف مقرر: الثقافة الاسلامية ١٠١

أ)التعريف بالمقرر الدراسي ومعلومات عامة عنه :

اسم المقرر: الثقافة الاسلامية	رمزه: ٦٠١١٠١
عدد الساعات المعتمدة: (٢).	
البرامج الذي يقدم فيها المقرر: إجباري لطلاب السنة الاولى في جميع كليات الجامعة .	
اسم عضو هيئة التدريس المسئول عن المقرر الدراسي: أحد أعضاء هيئة التدريس	
السنة أو المستوى الأكاديمي الذي يعطى فيه المقرر الدراسي: المستوى الأول	
المتطلبات السابقة لهذا المقرر: لا يوجد.	
المتطلبات الآنية لهذا المقرر: لا يوجد.	
موقع تقديم المقرر: داخل المبنى الرئيس للجامعة في شطري الطلاب والطالبات.	

ب) الأهداف:

١- نتائج التعلم الأساسية للطلبة المسجلين في المقرر:

- تعريف الطالب بالثقافة الاسلامية ومصادرها وخصائصها.
- تعريف الطالب بآداب وسمات طالب العلم .
- الماء الطالب بمفهوم العقيدة واهميتها وآثارها على الفرد والمجتمع .
- تعليم الطالب اصول العقيدة الاسلامية .(أركان الإيمان).
- تزويد الطالب بمفهوم العبادة في الاسلام وبيان مكانتها وشروطها وخصائصها وآثارها التربوية والإيمانية في حياة المسلم .
- وقوف الطالب على مفهوم الاخلاق في الاسلام وبيان اسسسها ومصادرها وخصائصها ووسائل اكتسابها وتقديم نماذج منها .
- تزويد الطالب بالوصايا والقواعد الأخلاقية بغية الالتزام بها.

٢- خطط تطوير وتحسين المقرر:

- عرض مفرداته ومضمونه على أفراد من الأساتذة المتميزين في التخصص محليًا وعالميًا.
- استطلاعات رأي الطلاب.
- المقارنة (المرجعية) بالمقررات المشابهة له في الجهات الأكاديمية الأخرى.

ج) توصيف المقرر الدراسي:

١- الموضوعات التي يتناولها المقرر:

قائمة الموضوعات	عدد الأسابيع	ساعات التدريس
- مدخل لدراسة الثقافة الإسلامية (ص ١٠- ٢٥)	١	٢
- مقدمات في دراسة العقيدة (ص٢٦-٤٩)	١	٢
(الإيمان بوجود الله تعالى ـ توحيد الربوبية) (ص٥٠- ٦١)	١	٢
- (توحيد الألوهية ـ توحيد الأسماء والصفات) (ص٦١-٧٢)	١	٢
- الإيمان بالملائكة والكتب (ص٧٣-٩٠)	١	٢
- الإيمان بالرسل عليهم السلام (ص٩١-١٠٨)	١	٢
- الإيمان باليوم الآخر (١) (ص١٠٩-١٢١)	١	٢
- الإيمان باليوم الآخر (٢) (ص١٢٢-١٣٦)	١	٢
- الإيمان بالقضاء والقدر (ص١٣٧-١٤٧)	١	٢
- العبادة في الإسلام (١) (ص١٤٨-١٥٧)	١	٢
- العبادة في الإسلام (٢) (ص١٥٨-١٦٥)	١	٢
- الأخلاق في الإسلام (١) (ص١٦٦-١٨٥)	١	٢

– الأخلاق في الإسلام (٢) (ص١٨٥–٢٠٦)	٢	٤

المحاضرة: ٣٢	مادة الدرس: ٢٨	اختبارات : ٤

٣– ساعات دراسة خاصة إضافية:

- قراءة ثقافية تخصصية لمدة ساعة إلى ساعتين أسبوعيًا من كتاب مدخل إلى الثقافة الإسلامية د. محمد رشاد سالم)، وينصح بالقراءة مرة ومرتين وثلاثة حتى يصل الطالب إلى الفهم دون الرجوع إلى الكتب التي خدمت الكتاب، ويتواصل مع الأستاذ للاستفسارات إن وجدت.

٤– تطوير نتائج التعلم في مختلف مجالات التعلم:

المعارف: توصيف للمعارف المراد اكتسابها : أن يكون الطالب قادرا على أن:

- يعرف الثقافة الاسلامية ومصادرها وخصائصها.
- يلم بآداب وسمات طالب العلم .
- يعرف مفهوم العقيدة واهميتها وآثارها على الفرد والمجتمع .
- يتعلم أصول العقيدة الاسلامية .
- يعرف مفهوم العبادة في الاسلام وبيان مكانتها وشروطها وخصائصها وآثارها التربوية والإيمانية في حياة المسلم .
- يقف على مفهوم الاخلاق في الاسلام وبيان اسسسها ومصادرها وخصائصها ووسائل اكتسابها وتقديم نماذج منها .
- يعرف الوصايا والقواعد الأخلاقية بغية الالتزام بها.

١- استراتيجيات التدريس المستخدمة لتنمية تلك المعارف:
٢- من خلال القراءة في الكتاب المقرر،(الثقافة ١)
٣- الإلقاء، وفتح الحوار والمناقشة،
٤- ومن خلال القراءة الذاتية في كتاب مدخل إلى الثقافة الإسلامية د. محمد رشاد سالم)،.
٥- طرق تقويم المعارف المكتسبة:

من خلال الاختبارات التحريرية المباشرة.

١- المهارات الإدراكية :

توصيف للمهارات الإدراكية المراد تنميتها : أن يكون الطالب قادرا على أن :

- يشرح الثقافة الاسلامية ومصادرها وخصائصها.
- يعدد آداب وسمات طالب العلم .
- يحلل مفهوم العقيدة واهميتها وآثارها على الفرد والمجتمع .
- يبين أصول العقيدة الاسلامية .
- يستنبط مفهوم العبادة في الاسلام ومكانتها وشروطها وخصائصها وآثارها التربوية والإيمانية في حياة المسلم .
- يشرح مفهوم الاخلاق في الاسلام وبيان اسسسها ومصادرها وخصائصها ووسائل اكتسابها وتقديم نماذج منها .
- يعدد الوصايا والقواعد الأخلاقية بغية الالتزام بها.

٢ –استراتيجيات التدريس المستخدمة لتنمية تلك المهارات :

توزيع بعض مفردات المقرر على الطلاب لتحليلها.

طرح قضايا لها صلة بالمقرر ومناقشة الطلاب فيها.

٢- – طرق تقويم المهارات الإدراكية لدى الطلاب :

تقويم الإسهامات الفردية في التكليفات الجماعية

تقويم الأبحاث الفردية المعتمدة على المهارة البحثية

الملاحظة المباشرة.

واختبارات خاصة لقياس القدرة المهارية.

ج. مهارات التعامل مع الآخرين و تحمل المسؤولية :

١- وصف لمهارات العلاقات الشخصية والقدرة على تحمل المسؤولية المطلوب تطويرها :

- يتحمل المسئولية الفردية من خلال تكاليف فردية.
- يتعاون مع فرق العمل ويتحمل المسئولية الجماعية.
- يتولي مهام قيادية.
- يمتص الصدمات ويقاوم التحديات.

٢- استراتيجيات التعليم المستخدمة في تطوير هذه المهارات :

- إعطاء معارف متعلقة بهذه المهارات.
- التدريس بطريقة المجموعات.
- فرق العمل للقيام بالواجبات والتكاليف.

٣- طرق تقويم مهارات التعامل مع الآخرين والقدرة على تحمل المسؤولية لدى الطلاب :

- الملاحظة المباشرة.
- التقويم الذاتي من قبل الطلاب لأنفسهم

د. مهارات التواصل، وتقنية المعلومات:

١- توصيف للمهارات المراد تنميتها في هذا المجال:
- يستخدم محركات البحث على النت في الحصول على المعلومة المطلوبة..
- يكتب تقريرا عن المكتبات العامة بلغة سليمة.
- ينشئ مجموعة على مواقع النت مع زملائه

٢- استراتيجيات التدريس المستخدمة لتنمية تلك المهارات:
- تكاليف بإعداد بحوث .
- أن يقوم الطالب ليتحدث أمام زملائه عن قضية لها صلة بالمقرر

٣- طرق تقويم المهارات العددية ومهارات التواصل لدى الطلاب:
- الملاحظة المباشرة.
- التقويم الذاتي من قبل الطلاب لأنفسهم.

جدول مهام تقويم الطلاب خلال الفصل الدراسي:

التقويم	مهمة التقويم (كتابة مقال، اختبار، مشروع جماعي، اختبار نهائي...الخ)	الأسبوع المحدد له	نسبته من التقويم النهائي
١	اختبار نصفي لقياس المعارف والمهارات	الثامن	٢٠٪
٢	التدريب العملي علي البحث العلي والمكتبات.	جميع الأسابيع	٢٠٪
٣	النهائي.	يحدد عن طريق الجامعة	٦٠٪

د. الدعم الطلابي:

١- الإرشاد المكتبي: يوم الاثنين المحاضرة الخامسة بالمكتب.

٢- التواصل الدائم: البريد الالكتروني:

هـ . مصادر التعلم:

١- الكتب المقررة المطلوبة: كتاب الثقافة المقرر ١٠١

٢- المراجع الرئيسة:

٣- نحو ثقافة إسلامية أصيلة	د. عمر الأشقر
٤- معالم الثقافة الإسلامية	د. عبد الكريم عثمان
٥- نظرات في الثقافة الإسلامية	عز الدين التميمي الخطيب وآخرين
٦- مدخل إلى الثقافة الإسلامية	د. محمد رشاد سالم.

٧- مصادر الدين الإسلامي وأبرز محاسنه د. سليمان بن عبد الله أبا الخيل. ٨- العبادة في الإسلام للقرضاوي ٩- الأخلاق الاسلامية للشيخ عبد الرحمن حبنكة الميداني . ١٠- خلق المسلم محمد الغزالي
الكتب و المراجع التي يوصى بها (المجلات العلمية، التقارير،...الخ) (أرفق قائمة بها) – الإسلام والحضارة الغربية د. محمد محمد حسين – شمس العرب (الله) تستطع على الغرب د. زيغريد هونكه . – مصادر الدين الإسلامي وأبرز محاسنه د. سليمان بن عبد الله أبا الخيل
٤- المراجع الإلكترونية، مواقع الإنترنت...الخ: – المواقع الالكترونية: مواقع المكتبات . – موقع مركز الملك فيصل – موقع المكتبة الشاملة
مواد تعليمية حاسوبية: – برنامج التراث الإسلامي، أو المكتبة الشاملة. – البحث في مصادر المعلومات الالكترونية على موقع مكتبة جامعة أم القرى. – البحث في محركات البحث الالكترونية.

و . المرافق اللازمة: قاعة دراسية بها عدد من الكراسي والطاولات تكفي لجميع الطلاب في المادة، ولوحة يُستحسن أن تكون سبورة ذكية.

ز. تقييم المقرر الدراسي وعمليات تطويره

١- استراتيجيات الحصول على التغذية الراجعة من الطلاب بخصوص فعالية التدريس: – استطلاع رأي سريع نهاية كل درس. – مقالة آخر الفصل الدراسي يكتبها الطالب عن المقرر وفوائده وجوانب القوة والقصور فيه.
٢- استراتيجيات أخرى لتقييم عملية التدريس من قبل المدرس أو القسم : – استشارة المختصين. – التقييم الذاتي. – استثمار التغذية الراجعة من الطلاب.
٣- عمليات تطوير التدريس : – التواصل الدائم مع المواقع التربوية واقتناص التجارب المفيدة والآراء في طرق التدريس والتقويم.

٤- عمليات التحقق من معايير الإنجاز لدى الطالب: – عرض عينة من تقارير الطلاب على المشاركين في تدريس المقرر. – عرض عينة من اختبارات الطلاب على المشاركين في تدريس المقرر.
٥- صف إجراءات التخطيط للمراجعة الدورية لمدى فعالية المقرر الدراسي والتخطيط لتطويرها: – أولا: التقييم الذاتي من قبل المدرس. – ثانيا: مقارنة التقييم الذاتي بآراء الطلاب. – ثالثا: مقارنتهما بآراء المختصين ممن تمت مشاورتهم. – رابعا: النظر في توصيفات المقررات المشابهة في الجهات الأكاديمية الأخرى (١) على الأقل، للمقارنة المرجعية. – خامسا: الخروج بالاقتراحات. – سادسا: النظر في إمكانية تطوير المقرر من خلال المقترحات.

سبحانك اللهم وبحمدك وآخر دعواهم أن الحمد لله رب العالمين والله ولي التوفيق

المملكة العربية السعودية
وزارة التعليم العالي
جامعة أم القرى
كلية الدعوة وأصول الدين

الـــرقـــم : .....
الـتـاريخ : .....
المشفوعات : .....

اسم المقرر : القرآن الكريم (١)

رقم المقرر : ١٠١

ساعات المقرر : وحدتان دراسيتان في الأسبوع

موضوعات المنهج :

أولاً : التلاوة :

تلاوة الربع الأخير من المصحف الشريف (من سورة يس إلى نهاية القرآن الكريم) مع مراعاة أحكام التجويد التي تعطى للطلاب في هذا الفصل .

ثانياً : غريب القرآن :

شرح المفردات الغريبة في القسم المكلف بتلاوته .

المرجع : كتاب غريب القرآن للراغب الأصفهاني ، أو كتاب كلمات القرآن للشيخ حسنين محمد مخلوف.

ثالثاً : أحكام التجويد :

أحكام النون الساكنة والتنوين ، الإظهار ، الإدغام ، الإقلاب ، الإخفاء .

أحكام الميم الساكنة : إخفاؤها ، إدغامها ، إظهارها .

حكم الميم والنون المشددتين ، تفخيم اللام وترقيقها من لفظ الجلالة ، اللام الشمسية واللام القمرية.

المد : الطبيعي ، المد المتصل وحكمه ، المد المنفصل وحكمه ، المد العارض للسكون ، المد اللازم وأقسامه .

Faculty AL-Da'awa & Osool AL-Deen
Makkah Al Mukarramah P.O.Box : 7040
Tel : 5563845
Fax : 5583888

كلية الدعوة وأصول الدين
مكة المكرمة ص . ب : ٧٠٤٠
تليفون ٥٥٦٣٨٤٥
فاكس : ٥٥٨٣٨٨٨

المملكة العربية السعودية
وزارة التعليم العالي
جامعة أم القرى
كلية الدعوة وأصول الدين

الـــرقـــم : .....
الـــتـــاريخ : .....
المشفوعات : .....

المرجع :

البرهان في تجويد القرآن ، للشيخ / محمد الصادق قمحاوي .

المراجع الأخرى :

- العميد للشيخ / محمود علي بسه .
- هداية القاري إلى تجويد كلام الباري للشيخ / عبد الفتاح المرصفي .
- نهاية القول المفيد في علم التجويد للشيخ / محمد مكي نصر .

رابعاً : الحفظ :

على الطلاب حفظ جزء (عم) كاملاً مع التطبيق العملي لأحكام التجويد المذكورة آنفاً .

Faculty AL-Da'awa & Osool AL-Deen
Makkah Al Mukarramah P.O.Box : 7040
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Fax : 5583888

كلية الدعوة وأصول الدين
مكة المكرمة ص . ب : ٧٠٤٠
تليفون ٥٥٦٣٨٤٥
فاكس : ٥٥٨٣٨٨٨

LEVEL 4

403280-4 Fundamental of Medical Physics

605201-2 The Holy Quraan II

601201-2 Islamic Culture II

403244-3 Method in Theoretical Physics II

403220-3 Classical Mechanics I

401364-3 Animal Biology

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title: Fundamentals of Medical Physics

Course Coordinator: Dr. Ramadan. A. Hassan

Course code: 403280-4

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: Fundamentals of Medical Physics **(code:** 4032280-4**)**
2. Credit hours: **4 (3+1+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Medical Physics.**
(If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course
Ramadan. A. Hassan
5. Level/year at which this course is offered: **Level 4/ 2nd Year**
6. Pre-requisites for this course (if any): **4800130-4**
7. Co-requisites for this course (if any): **NIL**
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	✓	What percentage?	80%
b. blended (traditional and online)	✓	What percentage?	10%
c. e-learning	✓	What percentage?	10%
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:

The mode of instruction is distributed and used three items [Traditional classroom with 80%, blended (traditional and online) 10%, and Traditional online with 10%].

B Objectives

1. What is the main purpose for this course?

This course is designed to demonstrate the study of;

1- The motions of the living bodies as: static forces, friction, translational motion, angular motion,

2- Define elasticity and strength of materials.

3- Acquire basics of fluids, the motion of fluids and body fluid flow.

4- Discuss the fundamentals of heat and life, kinetic theory and thermodynamics.

5- Describe different types of waves, sound, electricity, electrical technology.

6-Identify forces on bones and muscles, electrodynamics of nerve impulses, electrocardiograms, magnetocardiograms and magnetoencephalograms.

7- List different diffusion processes, membrane transport, kidney function.

8-Describe different biological effects in magnetic resonance and ultra-low frequency electromagnetic radiation, radiation therapy, imaging. and laser applications.

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)

Add the following topics and reference

1-Cooperate with other educational institutions to find how they deal with the subject.

2- Re- new the course references frequently.

3-Frequently check the latest discovery in science to improve the course objectives.

4- The course needs the use of computers.

5- Posting some course material on the websites to help the students.

6- Focusing on generic skills.

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

Course Description:

The course will cover the principle of physics, such as measurements, work and energy, Newton's laws, heat, fluid mechanics, and light. This course will provide a conceptual and experimental background in physics sufficient to enable students to take courses that are more advanced in related fields.

1 Topics to be Covered		
Topics	**No of Weeks**	**Contact hours**
❖ **Static force** 1 Equilibrium and Stability 2 Equilibrium Considerations for the Human Body 3 Stability of the Human Body under the Action of an External Force 4 Skeletal Muscles 5 Levers 6 The Elbow 7 Friction Standing at an Incline	**2**	**6**
❖ **Elasticity and Strength of Materials** 1 Longitudinal Stretch and Compression 2 A Spring 3 Bone Fracture: Energy Considerations 4 Impulsive Forces 5 Fracture Due to a Fall: Impulsive Force Considerations 6 Airbags: Inflating Collision Protection Devices 7-Whiplash Injury 8 Falling from Great Height 9 Osteoarthritis and Exercise. .	**2**	**6**
❖ **The Motion of Fluids** 1 Bernoulli's Equation 2 Viscosity and Poiseuille's Law 3 Turbulent Flow 4 Circulation of the Blood 5 Blood Pressure 6 Control of Blood Flow 7 Energetics of Blood Flow 8 Turbulence in the Blood 9 Arteriosclerosis and Blood Flow 10 Power Produced by the Heart 11 Measurement of Blood Pressure Exercises.	**2**	**6**

❖ **Wavs and Sound** 1 Properties of Sound 2 Some Properties of Waves (Reflection, Refraction, Interference, Diffraction) 3 Hearing and the Ear (Performance, Frequency and Intensity and Loudness) 4 Bats and Echoes 5 Sounds Produced by Animals 6 Acoustic Traps 7 Clinical Uses of Sound 8 Ultrasonic Waves Exercises **1st Class Test Exam**	**2**	**6**
❖ **Electricity** 1 The Nervous System 2 The Neuron 3 Electrical Potentials in the Axon 4 Action Potential 5 Axon as an Electric Cable 6 Propagation of the Action Potential 7 Synaptic Transmission .8 Action Potentials in Muscles 9 Surface Potentials 10 Electricity in Plants 11 Electricity in the Bone	**2**	**6**
❖ **Optics** 1 Vision. 2 Nature of Light 3 Structure of the Eye 4 Accommodation 5 Eye and the Camera 6 Lens System of the Eye 7 Reduced Eye .8 Retina 9 Resolving Power of the Eye. 10 Threshold of Vision 11 Vision and the Nervous System. 12 Defects in Vision. 13 Lens for Myopia. 14 Lens for Presbyopia and Hyperopia 15 Fiber Optics	**2**	**6**
❖ **Atomic Physics** 1 The Atom 2 Spectroscopy 3 Quantum 4 Electron Microscope 5 X-rays 6 X-ray Computerized Tomography 7 Lasers	**1**	**3**

7.1 Lasers application in medicine Exercises		
❖ **Nuclear Physics** 1 The Nucleus 2 Magnetic Resonance Imaging 2.1 Nuclear Magnetic Resonance 2.2 Imaging with NMR 2.3 Functional Magnetic Resonance Imaging (fMRI) 3 Radiation Therapy 4 Food Preservation by Radiation 5 Isotopic Tracers 6 Laws of Physics and Life Exercises	**2**	**6**
Exercises and Solved problems **2nd Class Test Exam**	**1**	**3**
	15 weeks	**45 hrs**

Practical part:

- The Human arm model--1
- The Human arm model--2
- Fluids Motion (Simulation)
- Doppler effect (Simulation)
- Action potential (Simulation)
- Eye vision
- X-ray
- Radioactive Dating (Simulation)

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	**-**	**42**	**-**	**-**	**87**
Credit	**3**	-	**1**	**-**	**-**	**4**

3. Additional private study/learning hours expected of students per week. **6**

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	Recognize facts, principle and concepts of elementary medical Physics	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams 3. Lecturing method: Board, Power point 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example, during the lecture. Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams Discussions during the lectures.
1.2	Describe concepts, Procedures of some experiments in medical physics	1. Demonstrating the basic principle of the experiment. 2. Show the best ways to perform the experiments 3. Show the best ways to demonstrate the results. 4. Show the best way to write the reports about the experiment. 5. Discussion with the student about the results.	Home work. Writing scientific Reports. Doing team research or team project. Doing team work to perform some experiments Discussions during the class.
2.0	**Cognitive Skills**		
2.1	Apply the laws of medical physics.	1. Preparing main outlines for teaching 2.Following some proofs 3.Define duties for each chapter 4.Encourage the student to look for the information in different references 5.Ask the student to attend lectures for practice solving problem	1.Midterm's exam. Exams, short quizzes 2.Asking about physical laws previously taught 3.Writing reports on selected parts of the course 4.Discussions of how to simplify or analyze some phenomena
2.2	Solve problems in Physics by using suitable mathematical principles		
2.3	Analyse and interpret quantitative results		
2.4	Express the medical physical phenomena mathematically.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-learning to be aware with recent	• Search through the internet and	• Evaluate the efforts of

	developments in physics.	use the library.	each student in preparing the report.
3.2	Work effectively in groups and exercise leadership when appropriate.	• Lab work. • Small group discussion. • Enhance educational skills. • Develop their interest in Science through :(lab work, field trips, visits to scientific and research. • Encourage the student to attend lectures regularly • Give students tasks of duties	• Evaluate the scientific values of reports. • Evaluate the work in team. • Evaluation of the role of each student in lab group assignment • Evaluation of student presentations
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form	• Homework • preparing a report on some topics related to the course depending on web sites.	• Evaluation of presentations • Evaluation of reports • Practical exam • Homework. • Final exams.
4.2	Collect and classify the material for a course		
4.3	Use basic medical physics terminology in English		
4.4	Acquire the skills to use the internet communicates tools.		
5.0	**Psychomotor**		
5.1	N. A	N. A	N. A

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, quizzes, unsolved problems, oral presentation, class discussion and case study and an essay (single and/or group project, and poster).	Weekly	10%
2	1st Class Test Exam	7th	10%
3	2nd Class Test Exam	13th	10%
4	Final Practical Exam & Lab. Reports.	15th	20%
5	Final Exam	16th-17th	50%

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)

Each student will supervise by an academic adviser in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks 1-Paul Davidovits "Physics in Biology and Medicine" 3rd edi. Elsevier 2008. 2-Russell K. Hobbie & Bradley J. Roth "Intermediate Physics for Medicine and Biology" Springer Science 2007.
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) Raymond A. Serway - John W. Jewett "Physics for Scientists and Engineers" 2004. John R. Cameron & James G. Skofronick "Medical physics" Willy John 1988 Physics, 4th edition , By: Halliday, Resnick, and Krane, Wiley (1992) Physics , 4th edition, By: J. Walker (2010)
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
http :// www.springer.com http:// www.sciencedirect.com
http:// www.gigabedia .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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board. There are enough laboratories for experimental physics, provided with air conditions, good data show, and experimental equipment.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Course reports
- Course evaluation.

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Revision of student answer paper by another staff member.
- Analysis the grades of students.

3 Processes for Improvement of Teaching

- Preparing the course as PPT.
- Using scientific flash and movies.
- Coupling the theoretical part with laboratory part
- Periodical revision of course content.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department.
- Feedback evaluation of teaching from independent organization.
- Independent evaluation by another instructor that give the same course in another faculty.
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

According to point 1 the plan of improvement should be given.

Name of Instructor: _____R. A. Hassan_____

Signature: Date Report Completed: 23/4/1439

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Alluqmani

Signature: Saleh Date Received: 23/4/1439

توصيف مقرر: الثقافة الاسلامية ٢٠١

أ)التعريف بالمقرر الدراسي ومعلومات عامة عنه :

اسم المقرر: الثقافة الإسلامية (ساعتان) رمزه : ٦٠١٢٠١
عدد الساعات المعتمدة: ساعتان
البرنامج أو البرامج الذي يقدم ضمنه المقرر الدراسي. إجباري لجميع طلاب وطالبات المرحلة الجامعية بكليات الجامعة
اسم عضو هيئة التدريس المسئول عن المقرر الدراسي: أحد أعضاء هيئة التدريس
السنة أو المستوى الأكاديمي الذي يعطى فيه المقرر الدراسي: المستوى الرابع
المتطلبات السابقة لهذا المقرر(إن وجدت): ثقافة إسلامية ٦٠١١٠١
المتطلبات الآنية لهذا المقرر (إن وجدت):): ثقافة إسلامية ٦٠١٣٠١): ثقافة إسلامية ٦٠١٤٠١
موقع تقديم المقرر إن لم يكن داخل المبنى الرئيس للمؤسسة التعليمية: القاعات الدراسية الجامعية في شطري الجامعة الطلاب والطالبات

ب) الأهداف :

- تعريف الطالب بالقرأن الكريم (قطعيته وتوثيقه وقـــــــراءاته عريف القرآن الكريم وبعض أسمائه نزول القرآن منجماً والحكمة منه)
- إلمام الطالب بالوحي: تعريفه ، صوره، أشكال نزوله صدق ظاهرة الوحي)
- تعريف الطالب بمراحل جمع القرآن الكريم.
- تعريف الطالب بتعظيم قدر القـــــرآن الكريم ومكانته و خصائصه
- تعريف الطالب بالقراءات والقراء والأحرف السبعة
- تزويد مضمون القرآن الكريم وما اشتمل عليه من موضوعات
- تعريف الطالب بالإعجاز في القرآن الكريم (معناه ،تاريخه، أنواعه)
- تزويد الطالب بتفسير سورة الحجرات

- تعريف الطالب بالسنة النبوية الشريفة (تعريفها ، مكانتها ، حجيتها ، جهود الصحابة رضوان الله عليهم في تلقيها وروايتها)
- تعريف الطالب بمفهوم الاجماع و القياس والاجتهاد والفتوى .
- تدريس الطالب عشرة أحاديـــــث نبوية شريفة .

٢–صف بإيجاز أية خطط يتم تنفيذها لتطوير وتحسين المقرر الدراسي .

أ– عمل استبيانات واخذ آراء الطلاب حول مفردات المادة والإفادة منها في تطوير المقرر

ب –استشارة الزملاء المختصين.

ج–الاستفادة من شبكة الانترنيت والمكتبة الجامعية لإعداد الأبحاث والتكاليف

ج) توصيف المقرر الدراسي

١–الموضوعات التي ينبغي تناولها:

قائمة الموضوعات	عدد الأسابيع	ساعات التدريس
الوحدة الأولى القرآن الكريم: قطعيته وتوثيقه وقـــــــــراءاته تعريف القرآن الكريم وبعض أسمائه الوحي: تعريفه، صوره، أشكال نزوله صدق ظاهرة الوحي نزول القرآن منجماً والحكمة منه المرحلة الأولى: في العهد النبوي كتابته المرحلة الثانية: في عهد أبي بكر المرحلة الثالثة: في عهد عثمان القراءات والقراء والأحرف السبعة	٢	٤
الوحدة الثانية تعظيم قدر القـــــرآن الكريم مكانة القرآن الكريم ـ خصائص القرآن الكريم مضمون القرآن الكريم وما اشتمل عليه من موضوعات سبيلنا نحو تعظيم قدر القرآن الكـــــريم كيفية البحث عن آية أو موضوع قرأني	٢	٤

الوحدة الثالثة الإعجاز في القرآن الكريم تاريخه، معناه، وجهه معنى الإعجاز في القرآن الكريم تاريخ الإعجاز في القرآن الكريم الإعجاز البياني من خلال: أولاً: النظم القرآني. ثانيًا: الكلمة القرآنية. ثالثًا: الفاصلة القرآنية. رابعًا: الجملة القرآنية الإعجاز الغيبي معناه ــ نموذج منه الإعجاز التشريعي معناه ــ نموذج منه الإعجاز العلمي التجريبي في القرآن الكريم، معناه، ضوابطه، نماذج منه الإعجاز النفسي، معناه ــ نموذج منه	٢	٤
القسم الثاني تفسير سورة الحجرات	٣	٦
القسم الثالث الوحدة الأولى مكانة السنة النبوية ومنزلتها في ضوء القرآن الكريم معنى السنة في اللغة واصطلاحات العلماء حجية السنة النبوية منزلة السنة النبوية من القرآن الكريم جهود الصحابة رضوان الله عليهم في تلقي السنة وروايتها	١	٢
الوحدة الثانية عناية المسلمين بالسنة النبوية وعلومـــــها تعريف علم الحديث رواية تعريف علم الحديث دراية كتابة الحديث في العهد النبوي كتابة الحديث في العهد الراشدي تدوين الحديث في العهد الأموي والعباسي	١	٢

تصنيف الحديث وظهور الكتب الستة منهج المحدثين في توثيق السنة ثمرة علم الحديث دراية معرفة كيفية البحث عن حديث ما؛ وتخرجه بإيجاز .		
القسم الرابع الاجماع (تعريفه — أدلته أنواعه — شروطه —حكمه) القياس تعريفه (أدلته — أمثلة عليه – أركانه — شروطه) الاجتهاد(تعريفه — مشروعيته — شروط المجتهد — حكمه) الفتوى(تعريفها – أهمية منصب الفتوى– شروط المفتي وصفته وآدابه — الفتوى وأثرها على المستفتي)	٢	٤
دراســـة عشرة أحاديـــــث الحديث الأول: «إنما الأعمال بالنيات...» الحديث الثاني: حديث جبريل الحديث الثالث: «من دعا إلى هدى...» الحديث الرابع: «من أحدث في أمرنا...» الحديث الخامس: التحذير من الاغترار بزهرة الدنيا الحديث السادس: فضل من استبرأ لدينه الحديث السابع: فضل من عَلِم وعلَّم الحديث الثامن: وجوب الأمر بالمعروف والنهي عن المنكر الحديث التاسع: احفظ الله يحفظك الحديث العاشر: تحريم مكة	٢	٤

المحاضرة: ٣٢	مادة الدرس: ٢٨	اختبارات : ٤
٣– ساعات دراسة خاصة إضافية/ساعات التعلم المتوقع أن يستوفيها الطالب فصليا. – يكلف الطالب بقراءة كتاب له صلة بالمقرر وتلخيصه . – عرض الأسئلة ونتائج التجربة على المدرس على البريد الالكتروني .		

٤– المعارف:
١–توصيف للمعارف المراد اكتسابها: أن يكون الطالب قادرا على أن: • يعرف القرآن الكريم (قطعيته وتوثيقه وقـــــــراءاته عريف القرآن الكريم وبعض أسمائه نزول القرآن منجماً والحكمة منه) • يلم بالوحي: تعريفه ، صوره، أشكال نزوله صدق ظاهرة الوحي) • يعرف مراحل جمع القرآن الكريم. • تعظيم قدر القـــرآن الكريم ومكانته و خصائصه • يلم بالقراءات والقراء والأحرف السبعة • يعرف مضمون القرآن الكريم وما اشتمل عليه من موضوعات • يعرف الإعجاز في القرآن الكريم (معناه ،تاريخه، أنواعه) • يفسر سورة الحجرات • يعرف السنة النبوية الشريفة (تعريفها ، مكانتها ، حجيتها ، جهود الصحابة رضوان الله عليهم في تلقيها وروايتها) • يلم بمفهوم الاجماع و القياس والاجتهاد والفتوى . • يعرف عشرة أحاديـــــث نبوية شريفة .
– ٢–استراتيجيات التدريس المستخدمة لتنمية تلك المعارف: – المحاضرات والمناقشات خلالها. – ربط الطالب بالمراجع الأساسية والمساندة في معرفة مفردات المقرر . – زيارة المواقع الإلكترونية والاستفادة منها.
٣–طرق تقويم المعارف المكتسبة: ا– الأسئلة الشفوية المباشرة خلال المحاضرة. ب– الاختبارات التحريرية.
ب. المهارات الإدراكية:
١–المهارات الإدراكية المراد تطويرها: أن يكون الطالب قادرا على أن: • يشرح القرآن الكريم (قطعيته وتوثيقه وقـــــــراءاته عريف القرآن الكريم وبعض أسمائه نزول القرآن منجماً والحكمة منه) • يبين الوحي: تعريفه ، صوره، أشكال نزوله صدق ظاهرة الوحي)

- يعدد مراحل جمع القرآن الكريم.
- يوضح تعظيم قدر القـــــرآن الكريم ومكانته و خصائصه
- يعدد القراءات والقراء والأحرف السبعة
- يحلل مضمون القرآن الكريم وما اشتمل عليه من موضوعات
- يستنبط الإعجاز في القرآن الكريم .
- يحلل سورة الحجرات
- يعرف السنة النبوية الشريفة (تعريفها ، مكانتها ، حجيتها ، جهود الصحابة رضوان الله عليهم في تلقيها وروايتها)
- يفرق بين مفهوم الاجماع و القياس والاجتهاد والفتوى .
- يشرح عشرة أحاديـــــث نبوية شريفة .

٢-استراتيجيات التدريس المستخدمة لتنمية تلك المهارات:

- توزيع بعض مفردات المقرر على الطلاب لتحليلها.
- طرح قضايا واقعية معاصرة لها صلة بالمقرر ومناقشة الطلاب فيها.

٣-طرق تقويم المهارات الإدراكية لدى الطلاب:

- الملاحظة المباشرة،
- تقييم قدرة الطلاب على التحليل.
- ج- تقييم آراء الطلاب أثناء مناقشة القضايا إبان الدرس.

ج. مهارات التعامل مع الآخرين و تحمل المسؤولية:

١-وصف لمهارات العلاقات الشخصية والقدرة على تحمل المسؤولية المطلوب تطويرها:

- المبادرة في التواصل مع الزملاء .
- الرغبة في الإسهام في تنمية التواصل الاجتماعي.
- القدرة على التواصل الاجتماعي عبر شبكة المعلومات الفيس بوك.
- تقبل النقد العلمي من الزملاء وكسر الجمود الفكري عن طريق الحوار.

٢-استراتيجيات التعليم المستخدمة في تطوير هذه المهارات:

أ- المحاضرات الأسبوعية.

ب- البحث المكتبي الجماعي.

٣- طرق تقويم مهارات التعامل مع الآخرين والقدرة على تحمل المسؤولية لدى الطلاب:

أ- الاستطلاع المباشر لأراء الطلاب وتطلعاتهم.

ب- الملاحظة المباشرة لسلوك الطلاب وتوجهاتهم.

هـ. المهارات الحركية النفسية (لاتوجد):

-جدول مهام تقويم الطلاب خلال الفصل الدراسي:

	اختبار نصفي	الثامن	٢٠٪
	الملاحظة المباشرة لقياس المهارات على طريقة التقويم المستمر	جميع الأسابيع	٢٠٪
	النهائي	السادس عشر	٦٠٪

د. الدعم الطلابي:

١-تدابير تقديم أعضاء هيئة التدريس للاستشارات والإرشاد الأكاديمي للطالب

- الإرشاد والتوجيه الأكاديمي للطلاب
- المحاضرة الأسبوعية يومي السبت والاثنين .
- الساعات المكتبية للإجابة على الاستفسارات.

هـ . مصادر التعلم:

١-الكتب المقررة المطلوبة: كتاب الثقافة الاسلامية (٢)

٢-المراجع الرئيسة:

١كتاب الثقافة الاسلامية (٢)

٣-الكتب و المراجع التي يوصى بها

١ — الثقافة الإسلامية (ثقافة المسلم وتحديات العصر) د. راشد شهوان وآخرون

٢ — نحو ثقافة إسلامية أصيلة ، د. عمر الأشقر.

٣ — نظرات في الثقافة الإسلامية : محفوظ عزام

٤ — أساسيات العلوم المعاصرة في التراث الإسلامي : أحمد فؤاد باشا

٤-المراجع الإلكترونية، مواقع الإنترنت...الخ:

http://www.ahlalhdeeth.com/vb/index.php
http://www.tafsir.net/vb/
http://213.150.161.217/kfcris/login.htm

٥-مواد تعليمية أخرى مثل البرامج المعتمدة على الحاسب الآلي/الأسطوانات المدمجة، والمعايير /اللوائح التنظيمية الفنية: التراث الإسلامي، أو المكتبة الشاملة.

و . المرافق اللازمة:

المملكة العربية السعودية
وزارة التعليم العالي
جامعة أم القرى
كلية الدعوة وأصول الدين

الـــرقـــم : .....
الـتـــاريخ : .....
المشفوعات : .....

اسم المقرر : القرآن الكريم (٢)

رقم المقرر : ٢٠١

ساعات المقرر : وحدتان دراسيتان في الأسبوع

موضوعات المنهج :

أولاً : التلاوة :

تلاوة الربع الثالث من المصحف الشريف (من سورة الكهف إلى نهاية سورة فاطر) مع مراعاة أحكام التجويد المقررة في الفصل الأول والتي تعطى للطلاب .

ثانياً : غريب القرآن :

شرح المفردات الغريبة الموجودة في القسم المكلف بتلاوته .

المرجع : كتاب غريب القرآن للراغب الأصفهاني ، أو كلمات القرآن للشيخ حسنين محمد مخلوف.

ثالثاً : أحكام التجويد :

مخارج الحروف وصفاتها ، إدغام المتماثلين والمتجانسين والمتقاربين ، ترقيق الراء وتفخيمها ، الوقف والابتداء ، التام والكافي والحسن والقبيح ، السكتات الأربع المتفق عليها ، التي هي في : الكهف ، ويس ، والقيامة ، والمطففين ، والسكتتان المختلف فيهما ، وهي : (ماليه هلك) بالحاقة ، وبين سورتي الأنفال وبراءة (وصلا) ، والألفات السبع الثابتة وقفاً والمحذوفة وصلاً ، وهي : ألف (أنا) حيثما وقعت ، و(لكنا) بالكهف ، و(الظنونا) و (الرسولا) و(السبيلا) بالأحزاب ، و(سلسلا) و(قواريرا) الأولى بسورة الإنسان .

كلية الدعوة وأصول الدين
مكة المكرمة ص . ب : ٧٠٤٠
تليفون ٥٥٦٣٨٤٥
فاكس : ٥٥٨٣٨٨٨

Faculty AL-Da'awa & Osool AL-Deen
Makkah Al Mukarramah P.O.Box : 7040
Tel : 5563845
Fax : 5583888

المملكة العربية السعودية
وزارة التعليم العالي
جامعة أم القرى
كلية الدعوة وأصول الدين

الـــرقـــم : .....
الـتـــاريخ : .....
المشفوعات : .....

المرجع :

البرهان في تجويد القرآن للشيخ / محمد الصادق قمحاوي .

المراجع الأخرى :

- العميد للشيخ / محمود علي بسه .
- هداية القاري إلى تجويد كلام الباري للشيخ / عبد الفتاح المرصفي .
- نهاية القول المفيد في علم التجويد ، للشيخ / محمد مكي نصر .

رابعاً : الحفظ :

على الطلاب أن يستمروا في حفظ ما كلفوا به في المستوى الأول ويضاف إليه حفظ جزء تبارك بكامله

كلية الدعوة وأصول الدين
مكة المكرمة ص . ب : ٧٠٤٠
تليفون ٥٥٦٣٨٤٥
فاكس : ٥٥٨٣٨٨٨

Faculty AL-Da'awa & Osool AL-Deen
Makkah Al Mukarramah P.O.Box : 7040
Tel : 5563845
Fax : 5583888

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title:
Theoretical Methods in Physics (2)

Course Coordinator:
Dr. Walid Belkacem Belhadj

Course code: 403242-3

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date : **17/4/1439**
College/Department : **College of Applied Science –Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Theoretical Methods in Physics (2) (Code: 403242-3)**			
2. Credit hours: **3 (3+0+0) Hrs**			
3. Program(s) in which the course is offered. **B.Sc Physics.** (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course **Dr. Walid Belkacem Belhadj**			
5. Level/year at which this course is offered: **2nd Year / Level 4**			
6. Pre-requisites for this course (if any): **Theoretical Methods in Physics (1) 403241-3**			
7. Co-requisites for this course (if any): **NIL**			
8. Location if not on main campus: **Main campus and Alzaher**			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?

This course together with Phys 403241 and Phys 403343 are designed to provide a variety of mathematical techniques for the Physical Sciences.

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)

1. Use Fourier series for expansion of periodic functions in terms of an infinite sum of sines and cosines.
2. Use Laplace transform and calculate solution of differential equations by Laplace transform.
3. Deal with Fourier transform, Dirac-Delta, and Green's functions and their applications in physics.
4. Deal with special functions (factorial, gamma, beta and error functions) that are used extensively in physics problems.
5. Develop an intuitive feeling for the precise mathematical formulation of physical problems and for the physical interpretation of the mathematical solutions.
6. Be familiar with the mathematical formulae of this course that frequently appear in physics problems.
7. Use computer to verify the solution of some physical problems.
8. Use computer to construct graphs of some functions.

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

Course Description:

The course provides a direct preparation for an advanced study in theoretical physics and is also an interesting element in the education of an experimental physicist. The physical principles behind the mathematical models are stressed so that insight and problem solving ability become primary. This course together with Phys 403241 and phys 403343 will cover the basic mathematical tools used in physical science and engineering: Vector analysis, partial differentiation, power and series, differential equations, special functions, integral transforms, and complex analysis. The course is designed to supply students for a variety of mathematical methods that need for advanced undergraduate and beginning graduate study in physical science and to develop a solid background for those who will continue into the mathematics of advanced theoretical physics.

1 Topics to be Covered

Topics	No of Weeks	Contact hours
❖ **Fourier series and transforms:** Simple Harmonic Motion and Wave Motion; Periodic Functions, Average Value of a Function, Fourier Coefficients, Complex Form of Fourier Series, Even and Odd Functions, Applications of Fourier Series, Fourier Transforms, Laplace Transforms.	**4**	**12**
❖ **Special functions:** Factorial Function, Gamma Function; Recursion Relation, Some Important Formulas Involving Gamma Functions, Beta Functions, Beta Functions in Terms of Gamma Functions, The Error Function, Asymptotic Series, Stirling's Formula, Elliptic Integrals and Functions.	**3**	**9**
❖ **Legendre's functions:** Leibniz' Rule, Rodrigues' Formula, Generating Function, Orthogonality of the Legendre Polynomials, Normalization of the Legendre Polynomials, Legendre Series, Associated Legendre Functions, Generalized Power Series.	**3**	**9**
❖ **Bessel's functions:** First and Second Solution of Bessel's Equation, Graphs and Zeros of Bessel Functions, Recursion Relations, Other Kinds of Bessel Functions, Orthogonality of Bessel Functions.	**3**	**9**
❖ **Hermite - Laguerre Functions:** Ladder operators, Hermite functions, Hermite polynomials, Laguerre functions, Laguerre polynomials, Associated Laguerre polynomials.	**2**	**6**
	15 weeks	**45 hrs**

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	**-**	**-**	**-**	**-**	**45**
Credit	**3**	**-**	**-**	**-**	**-**	**3**

3. Additional private study/learning hours expected for students per week. **6**

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 physical quantities, physical phenomena, and basic principles.	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: Board, Power point. 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Discussions during the lectures Exams: a) Quizzes (E-learning) b) Short exams (mid-term exams) c) Long exams (final) d) Oral exams .
1.2	Describe the physical laws and quantities using mathematics		
2.0	**Cognitive Skills**		
2.1	Apply the laws of physics to calculate some quantities.	1. Preparing main outlines for teaching. 2. Following some proofs. 3. Define duties for each chapter 4. Encourage the student to look for the information in different references. 5. Ask the student to attend lectures for practice solving problem.	1. Exams (Midterm, final, quizzes) 2. Asking about physical laws previously taught 3. Writing reports on selected parts of the course. 4. Discussions of how to simplify or analyze some phenomena.
2.2	Solve problems in physics by using suitable mathematics.		
2.3	Analyse and interpret quantitative results.		
2.4	Apply physical principle on day life phenomena.		
2.5	Derive the physical laws and formulas.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-learning to be aware with recent developments in physics	• Search through the internet and the library. • Small group discussion.	• Evaluate the efforts of each student in preparing the report.

3.2	Work effectively in groups and exercise leadership when appropriate.	• Enhance self-learning skills. • Develop their interest in Science through : (lab work, visits to scientific and research institutes).	• Evaluate the scientific reports. • Evaluate the team work in lab and small groups. • Evaluation of students presentations.
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form.	• Incorporating the use and utilization of computer, software, network and multimedia through courses • preparing a report on some topics related to the course depending on web sites	• Evaluating the scientific reports. • Evaluating activities and homework
4.2	Collect and classify the material for the course.		
4.3	Use basic physics terminology in English.		
4.4	Acquire the skills to use the internet communicates tools.		
5.0	**Psychomotor (NA)**		

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	Online quizzes	All weeks	10%
2	Exercises & Home works	All weeks	10 %
3	Participation in activities lectures and labs	All weeks	10 %
4	Midterm Exam (1)	8th week	15%
5	Midterm Exam (2)	11th week	15%
6	Final Exam	16th week	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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (4hrs per week)

E Learning Resources

1. List Required Textbooks 1. Mary L. Boas, Mathematical methods in the Physical sciences, third edition, John Wiley and Sons (2006), ISBN-13 978-0-471-19826-0.
2. List Essential References Materials (Journals, Reports, etc.) 1. G. Dennis Zill, R. Michael Cullen, Advanced engineering mathematics, Jones and Bartlett Publisher (2006), ISBN 9780763745912. 2. Eugene Butkov, Mathematical Physics, World student series edition (1973).
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc. 1. www.mpipks-dresden.mpg.de/~jochen/methoden/outline.html 2. People.uncw.edu/hermanr/phy311/mathphysbook/index.html
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.) • Class room is already provided with data show. • The area of class room is suitable concerning the number of enrolled students (68) and air conditioned. • Library. • Laboratory for fundamental of physics.
2. Computing resources (AV, data show, Smart Board, software, etc.) • Computer room.

• MATLAB software.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Revision of student answer paper by another staff member. • Analysis the grades of students.
3 Processes for Improvement of Teaching • Preparing the course as PPT. • Using scientific flash and movies. • Coupling the theoretical part with laboratory part • Periodical revision of course content.
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) • The instructors of the course are checking together and put a unique process of evaluation. • Check marking of a sample of papers by others in the department. • Feedback evaluation of teaching from independent organization. • Independent evaluation by another instructor that give the same course in another faculty. • Evaluation by the accreditation committee in the university.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. 9- The following points may help to get the course effectiveness • Student evaluation • Course report • Program report • Program Self study 10- According to point 1 the plan of improvement should be given.

Name of Instructor: _____**Walid Belkacem Belhadj**_____

Signature: Date Report Completed: 23/4/1439

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Alluqmani

Signature: Saleh Date Received: 23/4/1439

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course title: Classical Mechanics 1

Course code: 403220-3

Course Specifications

Institution: **Umm AL – Qura University**	Date : **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Classical Mechanics 1 (code: 403220-3)**			
2. Credit hours: **3 Hrs**			
3. Program(s) in which the course is offered. **BSc Physics** (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course **Dr. Fatma Elsayed Mahrous**			
5. Level/year at which this course is offered: **2nd Year / Level 4**			
6. Pre-requisites for this course (if any): **Classical Physics (403200-4)**			
7. Co-requisites for this course (if any) : ---			
8. Location, if not on the main campus: **Main campus and Al-Zaher**			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course? This course is designed to demonstrate and consolidate the basic physics concepts in classical mechanics, the general motion of the particles in three dimensions, the noninertial reference systems, the gravitation, and central forces.
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) 1- Outlines of the physical laws, principles and the associated proofs. 2. Highlighting the day life applications whenever exist. 3. Encourage the students to see more details in the international websites and reference books in the library. 4- Encourage the student to build an example of different experiments related to the course. 5- Frequently check for the latest discovery in science.

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

Course Description:
Chapter 1: A brief preparation in vector algebra and vector differentiation.
Chapter 2: Newton's laws of motion and the rectilinear motion of a single particle.
Chapter 3: Harmonic motion, damped and forced harmonic oscillator.
Chapter 4: The general motion of a particle in three dimensions.
Chapter 5: Noninertial reference systems.
Chapter 6: The central forces and celestial mechanics.

1 Topics to be Covered

Topics	No of Weeks	Contact hours
❖ **Fundamental Concepts Vectors** 14- Physical quantities and units. 15- Scalar and vector quantities. 16- Formal definition and rules. 17- The Scalar and Vector Products. 18- Triple products 19- Derivative of a vector. 20- Position vector of a particle velocity and Acceleration in Rectangular Coordinates. 21- Velocity and Acceleration in Polar Coordinates. 22- Velocity and Acceleration in Cylindrical and Spherical Coordinates.	**2**	**6**

❖ **Newtonian Mechanics, Rectilinear Motion of a Particle** 1- Newton's Law of Motion. 2- Rectilinear Motion: Uniform Acceleration Under a Constant Force. 3- Forces that Depend on Position: The Concepts of Kinetic and Potential Energy. 4- Velocity-Dependent Forces: Fluid Resistance and Terminal Velocity.	**3**	**9**
❖ **Oscillations** 1- Linear Resoring Force: Harmonic Motion. 2- Energy Considerations in Harmonic Motion. 3- Damped Harmonic Motion. 4- Forced Harmonic Motion: Resonance.	**2**	**6**
❖ **General Motion of a Particle in Three Dimensions** 1- Introduction. 2- The Potential Energy Function in Three-Dimensional Motion: The Del Operator. 3- Forces of the Separable Type. 4- The Harmonic Oscillator in Two and Three Dimensions. 5- Constrained Motion of a particle.	**2**	**6**
❖ **Noninertial Reference Systems** 1- Accelerated Coordinate Systems and Interial Forces. 2- Rotating Coordinate Systems. 3- Dynamics of a Particle in a Rotating Coordinate System. 4- Effects of Earth's Rotation. 5- The Foucault Pendulum.	**2**	**6**
❖ **Gravitation and Central Forces** 1- Introduction. 2- Gravitational Force between a Uniform Sphere and a Particle. 3- Kepler's Laws of Planetary Motion. 4- Kepler's Second Law: Equal Areas. 5- Kepler's Firs Law: The Law of Ellipses. 6- Kepler's Third Law: The Harmonic Law. 7- Potential Energy in a Gravitational Field: Gravitational Potential. 8- Potential Energy in a General Central Field. 9- Energy Equation of an Orbit in a Central Field. 10- Orbital Energies in an Inverse-Square Field.	**3**	**9**
	14 weeks	**42 hours**

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	**-**	**-**	**-**	**-**	**56**
Credit	**3**	**-**	**-**	**-**	**-**	**3**
3. Additional private study/learning hours expected for students per week.					**6**	

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 physical quantities, physical phenomena, and basic principles.	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: Board, Power point. 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Discussions during the lectures Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams .
1.2	Describe the physical laws and quantities using mathematics		
2.0	**Cognitive Skills**		
2.1	Apply the laws of physics to calculate some quantities.	1. Preparing main outlines for teaching. 2. Following some proofs. 3. Define duties for each chapter 4. Encourage the student to look for the	1. Exams (Midterm, final, quizzes) 2. Asking about physical laws previously taught 3. Writing reports on selected parts of the
2.2	Solve problems in physics by using suitable mathematics.		
2.3	Analyse and interpret quantitative results.		

2.4	Apply physical principle on day life phenomena.	information in different references. 5. Ask the student to attend lectures for practice solving problem.	course. 4. Discussions of how to simplify or analyze some phenomena.
2.5	Derive the physical laws and formulas.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-learning to be aware with recent developments in physics	• Search through the internet and the library. • Small group discussion. • Enhance self-learning skills. • Develop their interest in Science through : (lab work, visits to scientific and research institutes).	• Evaluate the efforts of each student in preparing the report. • Evaluate the scientific reports. • Evaluate the team work in lab and small groups. • Evaluation of students presentations.
3.2	Work effectively in groups and exercise leadership when appropriate.		
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form.	• Incorporating the use and utilization of computer, software, network and multimedia through courses • preparing a report on some topics related to the course depending on web sites	• Evaluating the scientific reports. • Evaluating activities and homework
4.2	Collect and classify the material for the course.		
4.3	Use basic physics terminology in English.		
4.4	Acquire the skills to use the internet communicates tools.		
5.0	**Psychomotor (NA)**		

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	Exercises & Home works	All weeks	5 %
2	Participation in activities, lectures	All weeks	5 %
3	In-Class Problem solving	All weeks	10 %
4	Midterm Exam1 (theoretical)	6th week	15%
5	Midterm Exam2 (theoretical)	11th week	15%
6	Final Exam (theoretical)	16th week	50%

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)

Each student will supervise by an academic adviser in physics Department and the time table for academic advice were given to the student each semester. (4 hours per week)

E Learning Resources

1. List Required Textbooks

G. R. Fowles and G. L. Cassiday, "Analytical Mechanics", 7th edition, Brooks Cole (2005).
G. R. Fowles, "Analytical Mechanics", 3rd edition, Holt, Rinehart and Winston (1977).

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

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

S. T. Thornton, and J. B. Marion, "Classical Dynamics of Particles and Systems", 5th edition, Brooks Cole (2003).

4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
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.) Classroom for 40 students with data show Library
2. Computing resources (AV, data show, Smart Board, software, etc.) Computer room Data show
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Classroom data show, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching
• Evaluating the instructor by the student using questionnaires. • Following up the progress of students in the course. • Evaluating the progress of student by projects.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Revision of student answer paper by another staff member. • Analysis the grades of students.
3 Processes for Improvement of Teaching

Strategies are modified each term according to the student feedback.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department.
- Feedback evaluation of teaching from independent organization.
- Independent evaluation by another instructor that give the same course in another faculty.
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

11- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

12- According to point 1 the plan of improvement should be given.

Name of Instructor: _____Fatma El-Sayed Mahrous Othman_____

Signature: _____Fatma El-Sayed_____ Date Report Completed: ___11/3/1439__

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Alluqmani

Signature: Saleh Date Received: 23/4/1439

Level 5

403384-2 Physics of radiation effects

403381-2 Laser in Medicine

403383-3 Health Physics

605301-2 The Holy Quraan III

601301-3 Islamic Culture III

403201-3 Electromagnetism

501101-2 Arabic Language

403350-4 Modern Physics

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title: Physics of Radiation Effects

Course Coordinator: Dr. Taha Alfawwal

Course code: 403384-2

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: Fundamentals of Medical Physics **(Code: 4033284-2)**
2. Credit hours: **2 (2+0+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Medical Physics.**
(If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course
Dr. Taha Alfawwal
5. Level/year at which this course is offered: **3rd Year/Level 5**
6. Pre-requisites for this course (if any): **Fundamental of medical physics (403280-4)**
7. Co-requisites for this course (if any): **NIL**
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**
9. Mode of Instruction (mark all that apply)

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

Comments:

The mode of instruction is distributed and used two items [Traditional classroom with 80%, and 20% blended (traditional and online)].

B Objectives

1. What is the main purpose for this course?
At the end of this course the students will be able to:
1-Explain basics of information of dose–response characteristics and modification.
2-Study the radiation effects and damage : Non Stochastic and Stochastic effects.
3-Acquire radiation-weighted dose units: the Sievert and the Rem.
4-Understand water radiolysis .
5-Compare between direct and indirect Action. Acquire information about effect of ionizing 6-
6-radiation on DNA molecule. List the différents route of radionucléides .
7-Calculate the total effective doses from different sources and estimate the radiation risk.
8-Describe the difference between radiation biology of normal and neoplastic Tissue Systems.
9- Describe the types of Radiation Carcinogenesis

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)

For each of the domains of learning shown below indicate:

- A brief summary of the knowledge or skill the course is intended to develop;
- A description of the teaching strategies to be used in the course to develop that knowledge or skill;

The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

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

Course Description:
The course is interested in studying effects of ionizing radiations on living cells and organisms, including physical, chemical, and physiological bases of radiation cytotoxicity, mutagenicity, and carcinogenesis.

1 Topics to be Covered

Topics	No of Weeks	Contact hours
Introduction to Radiobiology Dose–Response Characteristics	1 Week	2 hrs

Direct and Indirect radiation effect- water radiolysis- free radical formation.	2 weeks	4 hrs
Radiation damage: stochastic and non stochastic effect of radiation damage Non -Stochastic Radiation damage Characteristic of non stochastic stochastic effect Acute radiation syndrome includes: Hemopiotic Syndrome Gastrointestinal Syndrome Central nervous system Syndrome Other Acute Effects Skin Gonads. Testes and ovary eyes Radio-sensitivity of the embryo and fetuss Relative biological effectiveness 1st Class Test	4 weeks	16 hrs
Radiation damage : Stochastic effects Characteristic of stochastic radiation effects Examples: Cancer induction and genetic effects Cancer Leukemia Bone Cancer Lung Cancer Thyroid cancer Herditary effect	3 weeks	6 hrs
Radiation-Weighted Dose Units: The Sievert and The Rem Problems	2 Weeks	2 hrs
Molecular Mechanisms of DNA damage 2nd Class Test	2 weeks	2hrs
Molecular Mechanisms of Chromosome damage	1 Weeks	2 hrs
	15 weeks	30 hrs

Practical part:

- The Human arm model--1
- The Human arm model--2
- Fluids Motion (Simulation)
- Doppler effect (Simulation)

- Action potential (Simulation)
- Eye vision
- X-ray
- Radioactive Dating (Simulation)

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**30**	**-**	**-**	**-**	**-**	**30**
Credit	**2**	**-**	**-**	**-**	**-**	**2**
3. Additional private study/learning hours expected of students per week.					**4**	

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	a1. Describe the Dose Response Characteristics	Describing *the* Dose Response characteristics with demonstration of stochastic and non stochastic examples.	1 Oral questions 2.Presentations 3 .Quizzes.
1.2	a3.Define radiation-weighted dose units:	Describing radiation quantities and unit concepts with solving problems	1. Oral questions 2. Presentations 3. Quizzes

	The Sievert and the REM		4. Problem solving
1.3	a4. Recognize Molecular Mechanisms of DNA and chromosome damage	showing power point presentation for explanation the decontamination action plan	Presentations
1.4	a4. State knowledge to understand application of radiation effect on Normal Tissue and interpretation of fractionation a dose in radiotherapy	Using images and movies. Encouraging students to collect the new information about what the new in radiation biology by Enable the reference books and scientific sites concerning radiation biology	1. Oral questions 2. Presentations 3. Quizzes
1.5	a5.List different sources of radiation carcinogenices	showing power point presentation for explanation different sources of radiation carcinogenices	1. Oral question. 2. Presentations 3. Quizzes
2.0	**Cognitive Skills**		
2.1	Cognitive skills to be developed	Lectures	*The exam must contain questions that can measure these skills.*
2.2	Evaluate mathematical and physical formulas to solve problems in medical physics and related fields of studies	-Brain storming Discussion	*- Quiz and exams*
3.0	**Interpersonal Skills & Responsibility**		
3.1	**At the end of the course, the student will be able to:** C1. work effectively in a group to make a decision. -.	Lab work - Case Study - Active learning - Small group discussion	Evaluate the efforts of each student in preparing the report. Evaluation of students presentations Evaluate the scientific values of reports. Evaluate the work in team
3.2	C2. Analyse obtained data and how to manage it.		
	C3 Perform effective communication with colleagues and faculty members	Small group discussion	Evaluation of the role of each student in lab group assignment.

4.0	**Communication, Information Technology, Numerical**		
4.1	Enhancing the ability of students to use computers and internet. .	Homework (preparing a report on some topics related to the course depending on web sites). Seminars presentation Field visits to research laboratories	Evaluation of presentations Evaluation of reports Practical exam
5.0	**Psychomotor**		
5.1	N. A	N. A	N. A

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, quizzes, unsolved problems, oral presentation, class discussion and case study and an essay (single and/or group project, and poster).	Weekly	20%
2	1st Class Test Exam	7th	15%
3	2nd Class Test Exam	13th	15%
4	Final Exam	16th-17th	50%

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)

Each student will supervise by an academic adviser in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks

1- Edward L. Alpen "Radiation biophysics" academic press1998
2- Herman Cember and Thomas E. Johnson "introduction to Health Physics" 4th edi. McGraw-Hill 2009.

2. List Essential References Materials (Journals, Reports, etc.) UNSCAR.com, go to web sities, go to http://www.unscear.org
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) 1. Erric et al " : Radiobiology for radiobiologist" 2006 2- E.b Podgorsak " A handbook for teacher and students. 3 – Stabin " Radiation Protection and dosimetry" , Springer 2007 4- Smith F A "A primer in applied radiation physics" by World Scientific Publishing 2000
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc. ICRP web sities go to http:// ICRP.org/publications.asp
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. Staff website

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.) **1. Accommodation (Lecture rooms, laboratories, etc.)** • The classroom is already provided with data show. • The area of classroom is suitable concerning the number of enrolled students (68) and air conditioned.
2. Computing resources (AV, data show, Smart Board, software, etc.) **2. Computing resources** • Providing classrooms with computers and labs with data show.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Questionaries (Course survey and Examination survey) • Open discussion in the class room at the end of the lectures
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Course Survey • Program Survey

3 Processes for Improvement of Teaching

- Preparing the course as PPT.
- Using scientific movies.
- Periodical revision, of course content.

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)

- After the agreement of Department and Faculty administrations

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

13- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

14- According to point 1 the plan of improvement should be given.

Name of Instructor: _____ Dr. Taha Alfawwal

_____

Signature: Date Report Completed: 23/4/1439

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Allugmani

Signature: Saleh Date Received: 23/4/1439

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course title: Laser in Medicine

Course code: 403381-2

Course Specifications

Institution: **Umm AL – Qura University**	Date : **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Physics of Laser in medicine (code: 403381)**
2. Credit hours: **2 (2+0+0) Hrs**
3. Program(s) in which the course is offered. **BSc Medical Physics;**

   (If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course

   Mohamed M.Sabry
5. Level/year at which this course is offered : **3rd Year / Level 5**
6. Prerequisites for this course (if any): **Fundamentals of Medical Physics (403280-4)**
7. Co-requisites for this course (if any) : ---
8. Location if not on main campus: **Main campus and Alzaher**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course?

Study of Laser formation from 2, 3 and 4-level laser

Study of the optical cavity conditions for Laser formation

Study of some real Laser system like CO2 , He-Ne, Semiconductor, Ruby Lasers

Laser Safety and Laser transportation

Applications of Laser on Ophthalmological surgery.

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)

1-Cooperation with other educational institutions for experience gain.

2- Renew the course references frequently.

3- Posting some course material on the websites to help the students.

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

Course Description:

This course is dedicated to medical physics students to teach and introduce the uses of LASER in medicine and surgeries. It starts with describing the atom, and excitation. It then describes how LASER is formed and the associated conditions for LASER formation. It also introduces various types of LASER like gas LASER, Solid LASER and Dye LASER. Next, it describes how the laser beam is transferred in fibers and the biological effects on the different human tissues. Finally it gives an introduction to the laser applications in ophthalmology as an example.

1 Topics to be Covered		
Topics	**No of Weeks**	**Contact hours**
❖ **Introduction to Atomic excitation**	**3**	**6**
❖ **Laser formation**	**3**	**6**
❖ **Types of Laser**	**3**	**6**
❖ **Laser safety, damage and transmission**	**3**	**6**
❖ **Optical and Thermal Response of Tissue to Laser Radiation**	**3**	**6**
❖ **Lasers in Ophthalmology**	**15 weeks**	**30 hrs**

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**30**	**-**	**-**	**-**	**-**	**30**
Credit	**2**	**-**	**-**	**-**	**-**	**2**

3. Additional private study/learning hours expected of students per week.	**4**

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	Recognize facts, principle and concepts of laser formation	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams 3. Lecturing method: Board, multimedia 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Discussions during the lectures.
1.2	Applying biological information to the use of laser	1. Applying the principles to realistic physics problems. 2. Show the best ways to solve the	Home work. Discussions during the class.

		problems 3. Show the best ways to demonstrate the results. 4. Discussion with the student about the results.	
2.0	**Cognitive Skills**		
2.1	Apply the laws of physics.	1. Preparing main outlines for teaching 2.Following some proofs 3.Define duties for each chapter 4.Encourage the student to look for the information in different references 5.Ask the student to attend lectures for practice solving problem	1.Midterm's exam. Exams, short quizzes 2.Asking about methods previously taught 3.Discussions of how to simplify or analyze some phenomena
2.2	Solve problems in Physics by using suitable mathematical principles		
2.3	Analyse and interpret quantitative results		
2.4	Express the physical phenomena mathematically.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-learning to be aware with recent developments in physics	• Search through the internet and use the library. • Small group discussion. • Enhance educational skills. • Encourage the student to attend lectures regularly • Give students tasks of duties	• Evaluate the scientific values of solutions. • Evaluate the work in team • Evaluation of the role of each student in lab group assignment • Evaluation of students presentations
3.2	Work effectively in groups.		
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form	• Homework • preparing a report on some topics related to the course depending on web sites.	• Evaluation of presentations • Evaluation of reports • Practical exam • Homework. • Final exams.
4.2	Collect and classify the material for a course		
4.3	Use basic physics terminology in English		
4.4	Acquire the skills to use the internet communicates tools.		
5.0	**Psychomotor**		

5.1	N/A	N/A	N/A

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	Exercises & Home works	All weeks	10 %
2	Participation in activities during lectures	All weeks	10 %
3	1st Periodic Exam	8th week	15%
4	2nd Periodic Exam	11th week	15%
5	Final Exam	16th week	50%

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)

Students are supervised by academic advisers in physics Department and the time table for academic advice were given to the student each semester. (4hrs per week)

E Learning Resources

1. List Required Textbooks

1-Paul Davidovits "Physics in Biology and Medicine" 3rd edi. Elsevier 2008.

2-Russell K. Hobbie & Bradley J. Roth "Intermediate Physics for Medicine and Biology" Springer Science 2007.

3- Raymond A. Serway - John W. Jewett "Physics for Scientists and Engineers" Thomson Brooks 2004.

4-John R. Cameron & James G. Skofronick "Medical physics" Willy John 1988
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Revision of student answer paper by another staff member.

• Analysis of the grades of students.
3 Processes for Improvement of Teaching • Preparing the course as PPT. • Coupling the theoretical part with real physics problems • Periodical revision of course content.
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) • The instructors of the course are checking together and put a unique process of evaluation. • Check marking of a sample of papers by others in the department. • Feedback evaluation of teaching from independent organization. • Independent evaluation by another instructor that give the same course in another faculty. • Evaluation by the accreditation committee in the university.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. 15- The following points may help to get the course effectiveness • Student evaluation • Course report • Program report • Program Self study 16- According to point 1 the plan of improvement should be given.

Name of Instructor: _____Mohamed M.Sabry_____

Signature: _____ Date Report Completed: _____

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Alluqmani

Signature: Saleh Date Received: 23/4/1439

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course title: Health Physics

Course code: 403383-3

Course Specifications

Institution: **Umm AL – Qura University**	Date : **17/4/1439 H**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Health Physics (code: 403383)**
2. Credit hours: **3 Hrs**
3. Program(s) in which the course is offered. **B.Sc Medical Physics**
(If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course
Dr. Hanan Amer
5. Level/year at which this course is offered: **5th Level /3rd Year**
6. Pre-requisites for this course (if any): **Fundamental of medical physics (403280-4)**
7. Co-requisites for this course (if any): **NIL**
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	✓	What percentage?	60%
b. blended (traditional and online)	✓	What percentage?	20%
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?

At the end of this course, the student should be able to:

- Establish the ubiquitous nature of radiation and the many technologies in his society which utilize radiation or radioactive materials.
- Provide the basic understanding of radiation and radioactive decay.
- Explain the biological effects of exposure to radiation.
- Demonstrate how radiation can be detected and dose measured
- Provide the basis for radiation protection and keeping exposure to As Low as Reasonable Achievable (ALRA).
- Provide a realistic perspective on the radioactive waste disposal.

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)

To improve the student\s expert in the field of Health Physics
1- Cooperate with external organizations to increase student's expert in field
2. Increase the students' open discusstion with radiation experts in the department.
3. Encourge students to register to webinars and worshops related to the radiation protection offered hospitals and medical organisations in KSA, in addition to that offered online by IAEA.
4- Encourage the student to write frequently report about different topics in field using references in the liberary and SDL
5- Frequently updating of the course topics

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

Course Description:
An introduction to the field of Health physics, which concetrates on the fundamentals of radiation and radiation protection; including types of ionizing and non-ionizing radiation, radioactive decays,interaction of radiation with matter, biological effects of exposure to low level radiation, radiation detection and measurement, radiation protection methods and techniques, and radioactive waste disposal. Lectures will include use of radiation and personal exposures in the categories of environmental radiation, medical applications, consumer products, industrial uses, research uses, and military uses, moreover, various types of sensors and measurement apparatus used for the calibration of medical imaging and therapy systems will receive particular attention

1 Topics to be Covered		
Topics	**No of Weeks**	**Contact hours**
❖ **Radiation Sources** • Radioactivity • Natural Source of Radiation Exposure. • Exposure Eatimates. • Human-Made Sources of Radiation Exposure • Transformation Mechanisms • Transformation Kinetics • Activity • Serial Transformation • Interaction of Radiation with Matter: Beta Particles – Alpha Particles – Gamma rays - Neutrons	**2**	**6**
❖ **Standards and Regulations** • Objectives of Standards • Occupational Limits • Non-Occupational (Puplic) Exposures • Regulations	**1**	**3**
❖ **Radiobiological Basis for Health Physics** • Law of Bergonie and Tribondeau • Degree of Biological Damage • General Radiation Effects and Irradiations in the Individual • Specific Radiation Effects • Acute Radiation exposures • Delayed Effects • Radiation Risk and Risk Models • Dose Response Relationships. • Radiation-Weighted Dose Units: The Sievert and The Rem	**2**	**6**
❖ **Instrumentations** • Gas-Filled Detectors • **Scintillation Counters** • **Semiconductor Detectors** • **Nuclear Spectroscopy** • **Particle Monitoring Instruments** • **Neutron Measurements** • **Particle Detection Efficiency** • **Caliberation**	**3**	**9**

❖ **Environmental Health Physics** • Types of Radioactive Waste • Major Radioactive Nuclides • Environmental Releases • Enivronmental Monitoring Programs • Nucleasr Waste Disposal • Transportation • Package Radiation Surveys and Limits • Transport Vehicle Surveys.	**2**	**6**
❖ **ALARA and Shielding** • ALARA principle • Photon Shielding • X-ray Shielding • Beta Particle Shielding • Shield Design and Beta-Ray Properties • Neutron Shielding • Example: X-ray Shielding for radiographic and cardiac rooms	**2**	**6**
❖ **Nuclear Emergencies** • Regulatory Guidance • Emergency Doses for Radiation Workers • ICRP Emergency Dose Recommendations • Accident Classification • Protective Action Guidelines • Internal Uptakes • Examples of Nuclear Emergencies: Chernobyl • Accident Sequence • Radioactivity Relassed to the Environment • International Dispersal of Radioactive Materials	**2**	**6**
❖ **Students Presentations in Selected Health Physics Topics**	**1**	**3**
	15 weeks	**45 hrs**

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**					**45**
Credit	**3**					**3**

3. Additional private study/learning hours expected for students per week.	**6**

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	**List Transformation Mechanisms and Kinetics**	1. Lectures 2. Tutorials 3. Individual Assignment 4. Discussions	a) Solve some example during the lecture. b) Quizzes c) Short exams (mid- term exams) d) Long exams (final) e) Discussions during the lectures. f) Home work. g) Write a Report
1.2	**Recognize occupational and public exposure limits in addition to the safety requirement**		
1.3	**Outline the Different Types of Health Physics Instrumentations**		
1.4	**Recognize the Types of Radioactive Wastes and Environmental Monitoring Program**		

2.0	**Cognitive Skills**		
2.1	**The ability to explain the different types of radiation interactions with matter**	1. Analatyical problems in field 2. Individual and Group Assigments 3. Group Discussions	a) Aissgnments included some open end tasks b) Problem solving skills c) Emergency case study d) Homework e) Final exam f) Short exams g) Reports
2.2	**The ability to analyze merits and drawbacks of different health physics instrumentatios**		
2.3	**The ability to design X-ray shielding of radiographic and cardiac medical rooms.**		
2.4	**The ability to explain the international dispersal of radioactive materials and the accident sequence.**		
3.0	**Interpersonal Skills & Responsibility**		
3.1	**Write a plan for packing and transporting a radioactive wastes**	1. Writing an essay 2. Presentations in some selected topics 3. Small Group Discussion. 4. Visits to Hospitals to Improve Students' Expert in Field	a) Essay (Group Assessment) b) Presentations (individual and Group Assessment) c) Homework d) Final exam e) Report in field (Individual Assessment)
3.2	**Choose the appropriate detector for monitoring and survying**		

4.0	**Communication, Information Technology, Numerical**		
4.1	**Research to sovle selected cases in field.**	1. Group Discussions 2. Reports 3. Presentations 4. Accidental Case Study	a) Essay (Group Assessment) b) Presentations (individual and Group Assessment) c) Report in field (Individual Assessment)
4.2	**Demonstrate the use of health physics instrumentations in different fields.**		
4.3	**Illustrate the Protocol of Health Physics Safety and Radioavtive waste Disposal**		
5.0	**Psychomotor**		
5.1	N/A	N/A	N/A

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	Exercises & Home works	All weeks	5 %
2	Participation	All weeks	5 %
3	In-Class Problem Solving	13th,7th week	5%
	Activity	15th week	5%
4	Midterm 1	6th week	15%
5	Midterm 2	10th week	15%
6	Final Exam	16th week	50%

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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (4hrs per week)

E Learning Resources

1. List Required Textbooks

1. Herman Cember and Thomas E. Johnson "Introduction to Health Physics" 4th Eds. McGraw-Hill. **2009**. (Electronic + Hard Copies)
2. Joseph J. Bevelacqua. "Basic Health Physics", 1st Eds., Wiley-VCH, 2010. (Hard Copies)

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

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

1- Joseph Magill & Jean Galy "Radioactivity · Radionuclides · Radiation", 1st Ed., Springer, **2005**.
2- Michael G. Stabin. "Radiation Protection and Dosimetry", 1st Ed., Springer, **2007**.

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

- http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-wastes/radioactive-waste-management.aspx
- https://quizlet.com/24704162/radiography-health-physics-flash-cards/

- https://quizlet.com/217730233/rb-4-health-physics-flash-cards/
- https://www.iaea.org/OurWork/ST/NE/NEFW/home.html
- http://www.icrp.org/
- https://en.wikipedia.org/wiki/Health_physics

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. N/A

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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Course reports
- Course evaluation.

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Revision of student answer paper by another staff member.

- Analysis the grades of students.

3 Processes for Improvement of Teaching

- Preparing the course as PPT.
- Using scientific flash and movies.
- Annual updating of course content.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department..
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

17- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

18- According to point 1 the plan of improvement should be given.

Name of Instructor: **Dr. Hanan Amer**

Signature: _____ Date Report Completed: **15/2/1439 H**

Name of Field Experience Teaching Staff : **Dr/ Taha M. El-fawal**

Program Coordinator: **Saleh M. Alluqmani**

Signature: Saleh Date Received: **5/3/1439 H**

Head of Department: **Saleh M. Alluqmani**

Signature: Saleh Date Received: **17/4/1439 H**

المملكة العربية السعودية
وزارة التعليم العالي
جامعة أم القرى
كلية الدعوة وأصول الدين

الـــرقـــم : .....
الـــتـــاريخ : .....
المشفوعات : .....

اسم المقرر : القرآن الكريم (٣)

رقم المقرر : ٣٠١

ساعات المقرر : وحدتان دراسيتان في الأسبوع

موضوعات المنهج :

أولاً : التلاوة :

تلاوة الربع الثاني من المصحف الشريف ، من سورة الأعراف إلى نهاية سورة الإسراء ، مع مراعاة أحكام التجويد عامة .

ثانياً : غريب القرآن :

شرح المفردات الغريبة الموجودة في القسم المكلف بتلاوته .

المرجع : كتاب غريب القرآن للراغب الأصفهاني ، أو كلمات القرآن للشيخ حسنين محمد مخلوف.

ثالثاً : أحكام التجويد :

على الطلاب في هذا الفصل استحضار وتطبيق جميع أحكام التجويد .

المملكة العربية السعودية
وزارة التعليم العالي
جامعة أم القرى
كلية الدعوة وأصول الدين

الـــرقـــم : .....
الـــتـــاريخ : .....
المشفوعات : .....

المرجع :

البرهان في تجويد القرآن للشيخ / محمد الصادق قمحاوي .

المراجع الأخرى :

- العميد للشيخ / محمود علي بسه .
- هداية القاري إلى تجويد كلام الباري للشيخ / عبد الفتاح المرصفي .
- نهاية القول المفيد في علم التجويد ، للشيخ / محمد مكي نصر .

رابعاً : الحفظ :

حفظ جزء (قد سمع) بكامله ، مع استمرار حفظ الجزأين السابقين .

المؤسسة: جامعة أم القرى

كلية الدعوة وأصول الدين

قسم الدعوة والثقافة الإسلامية

توصيف مقرر: الثقافة الاسلامية ٣٠١

أ)التعريف بالمقرر الدراسي ومعلومات عامة عنه :

اسم المقرر: الثقافة الإسلامية (٣) رمزه : ٦٠١٣٠١
عدد الساعات المعتمدة: ثلاث ساعات
البرنامج أو البرامج الذي يقدم ضمنه المقرر الدراسي. إجباري لجميع طلاب وطالبات المرحلة الجامعية بكليات الجامعة
اسم عضو هيئة التدريس المسئول عن المقرر الدراسي: أحد أعضاء هيئة التدريس
السنة أو المستوى الأكاديمي الذي يعطى فيه المقرر الدراسي: المستوى الخامس
المتطلبات السابقة لهذا المقرر(إن وجدت): الثقافة الإسلامية ٦٠١١٠١– الثقافة الإسلامية ٦٠١٢٠١
المتطلبات الآنية لهذا المقرر (إن وجدت): الثقافة الإسلامية ٦٠١٤٠١
موقع تقديم المقرر إن لم يكن داخل المبنى الرئيس للمؤسسة التعليمية: القاعات الدراسية الجامعية في شطري الجامعة الطلاب والطالبات

ب) الأهداف:

- تعريف الطالب بخصائص الشريعة الإسلامية ومكانة التشريع في الدين الإسلامي .
- إبراز خصائص النظم الإسلامية.
- تأصيل مفهوم نظام وأحكام الأسرة في الإسلام من خلال نصوص الوحيين واجتهاد الفقهاء.
- رد الشبهات التي تثار حول النظم الإسلامية خاصة نظام تعدد الزوجات ونظام الحكم والحدود.
- تأصيل مفهوم وأحكام النظام الاقتصادي في الإسلام مع بيان مساوئ النظم الاقتصادية الوضعية من شيوعية

ورأسمالية. • تأصيل مفهوم وأحكام النظام السياسي الإسلامي. • تأصيل مفهوم وأحكام النظام الجنائي وأحكامه في الإسلام. • التعريف بالشبهات حول نظام الحدود في الإسلام وردها.
٢–صف بإيجاز أية خطط يتم تنفيذها لتطوير وتحسين المقرر الدراسي . أ– عمل استبيانات واخذ آراء الطلاب حول مفردات المادة والإفادة منها في تطوير المقرر ب – استشارة الزملاء المختصين. ج–الاستفادة من شبكة الانترنيت والمكتبة الجامعية لإعداد الأبحاث والتكاليف

ج) توصيف المقرر الدراسي

١–الموضوعات التي ينبغي تناولها :		
قائمة الموضوعات	عدد الأسابيع	ساعات التدريس
تمهيد: مدخل عام لدراسة النظم الإسلامية. تعريف موجز بالنظم الإسلامية. تكامل النظم الإسلامية. أنواعها وطريقة دراستها في مادة الثقافة الإسلامية. (ص ٧–١٣)	١	٣
نظام الأسرة في الإسلام (ص١٤–٣٢)	١	٣
مراحل تكوين الأسرة (ص٣٣–٥٩)	١	٣
مراعاة الإسلام للواقع وأساليب فض المنازعات (ص٦٠– ٧٩)	١	٣
النظام الاقتصادي في الإسلام (ص١١٤–١٣٤	١	٣
من المبدأ الرابع إلى نهاية النظام الاقتصادي (ص١٣٥– ١٦٥)	٢	٦
النظام السياسي في الإسلام (ص١٦٦–١٨٤)	١	٣
من حكم إقامة الدولة في الإسلام (ص١٨٥–٢٠٥)	١	٣
من حقوق الحاكم إلى نهاية النظام السياسي (ص٢٠٦–٢١٩)	١	٣

نظام العقوبات إلى نهاية عقوبة اللواط (ص٢٢٠-٢٤٨)	٢	٦
من حد القذف إلى الفروق بين الحدود والقوانين (ص٢٤٩-٢٦٦)	١	٣
بعض الشبهات ـ حقوق الإنسان في الإسلام (ص٢٦٧-٢٨٢)	١	٣

المحاضرة: ٤٨	مادة الدرس: ٤٢	اختبارات : ٦

٣- ساعات دراسة خاصة إضافية/ساعات التعلم المتوقع أن يستوفيها الطالب فصليا.

- يكلف الطالب بقراءة كتاب له صلة بالمقرر وتلخيصه .

- عرض الأسئلة ونتائج التجربة على المدرس على البريد الالكتروني .

٤- المعارف:

١-توصيف للمعارف المراد اكتسابها: أن يكون الطالب قادرا على أن :

- يعرف بخصائص النظم الإسلامية.
- يبين معنى خصائص الشريعة الإسلامية ومكانة التشريع في الدين الاسلامي.
- يحدد مفهوم نظام الاسرة في الاسلام واهم احكامه.
- يلم بمفهوم النظام الاقتصادي الوضعي الشيوعي الاشتراكي والرأسمالي ومعرفة اهم مساوئهما.
- يسرد أهم مزايا الاقتصاد الاسلامي وأسسه ونظرة الشريعة الاسلامية الى المال والملكية والعمل ومعرفة نبذة عن البيوع ومفاتيح الرزق الحلال.
- يعرف النظام السياسي الاسلامي وأهدافه وغاياته وأسس النظام السياسي للدولة الاسلامية .
- يشرح كيفية نشأة الدولة الاسلامية في العهد النبوي والراشدي وعرفة حقوق الراعي والرعية.
- يسرد بنظام العقوبات والحدود والضرورات الخمس وسبل المحافظة عليها.

٢-استراتيجيات التدريس المستخدمة لتنمية تلك المعارف:

- المحاضرات والمناقشات خلالها.
- ربط الطالب بالمراجع الأساسية والمساندة في معرفة مفردات المقرر .

– زيارة المواقع الإلكترونية والاستفادة منها.
٣–طرق تقويم المعارف المكتسبة : – الأسئلة الشفوية المباشرة خلال المحاضرة. – الاختبارات التحريرية.
ب. المهارات الإدراكية :
المهارات الإدراكية المراد تطويرها : أن يكون الطالب قادرا على أن : • يقارن بين خصائص النظم الإسلامية. • يبرهن على خصائص الشريعة الإسلامية ومكانة التشريع في الدين الاسلامي. • يتبنى مفهوم نظام الاسرة في الاسلام واهم احكامه. • يستخلص مفهوم النظام الاقتصادي الوضعي الشيوعي الاشتراكي والراسمالي ومعرفة اهم مساوئهما. • يرتب أهم مزايا الاقتصاد الاسلامي وأسسه ونظرة الشريعة الاسلامية الى المال والملكية والعمل ومعرفة نبذة عن البيوع ومفاتيح الرزق الحلال. • يدلل النظام السياسي الاسلامي وأهدافه وغاياته وأسس النظام السياسي للدولة الاسلامية . • يحلل كيفية نشأة الدولة الاسلامية في العهد النبوي والراشدي وعرفة حقوق الراعي والرعية. ١. يبرهن على نظام العقوبات والحدود والضرورات الخمس وسبل المحافظة عليها.
٢–استراتيجيات التدريس المستخدمة لتنمية تلك المهارات : توزيع بعض مفردات المقرر على الطلاب لتحليلها. طرح قضايا واقعية معاصرة لها صلة بالمقرر ومناقشة الطلاب فيها.
٣–طرق تقويم المهارات الإدراكية لدى الطلاب : أ– الملاحظة المباشرة. ب– تقييم قدرة الطلاب على التحليل. ج– تقييم آراء الطلاب اثناء مناقشة القضايا ابان الدرس.
ج. مهارات التعامل مع الآخرين و تحمل المسؤولية :

١–وصف لمهارات العلاقات الشخصية والقدرة على تحمل المسؤولية المطلوب تطويرها: – المبادرة في التواصل مع الزملاء . – الرغبة في الإسهام في تنمية التواصل الاجتماعي. – القدرة على التواصل الاجتماعي عبر شبكة المعلومات الفيس بوك. – تقبل النقد العلمي من الزملاء وكسر الجمود الفكري عن طريق الحوار.
٢–استراتيجيات التعليم المستخدمة في تطوير هذه المهارات: – المحاضرات الأسبوعية. – البحث المكتبي الجماعي.
٣– طرق تقويم مهارات التعامل مع الآخرين والقدرة على تحمل المسؤولية لدى الطلاب: – الاستطلاع المباشر لأراء الطلاب وتطلعاتهم. – الملاحظة المباشرة لسلوك الطلاب وتوجهاتهم.
هـ. المهارات الحركية النفسية (لاتوجد): –جدول مهام تقويم الطلاب خلال الفصل الدراسي:

١	اختبار نصفي	الثامن	٢٠٪
٢	الملاحظة المباشرة لقياس المهارات على طريقة التقويم المستمر	جميع الأسابيع	٢٠٪
٣	النهائي	السادس عشر	٦٠٪

د. الدعم الطلابي:

١–تدابير تقديم أعضاء هيئة التدريس للاستشارات والإرشاد الأكاديمي للطالب – الإرشاد والتوجيه الأكاديمي للطلاب – المحاضرة الأسبوعية . – الساعات المكتبية للإجابة على الاستفسارات.

هـ . مصادر التعلم:

١–الكتب المقررة المطلوبة: (يرجى التحديث المستمر) كتاب الثقافة الاسلامية (٣)
٢–المراجع الرئيسة: • المدخل لدراسة النظم الاسلامية د.محمدرافت سعيد.

- النظم الاسلامية ٠٠نشاتهاوتطورها٠د٠صبحي الصالح
- الاحكام السلطانية للماوردي ولأبي يعلى
- السياسة الشرعية لابن تيمية
- الطرق الحكمية لابن القيم
- التراتيب الادارية للكتاني
- النظام الاساسي للحكم في المملكة العربية السعودية
- التاريخ الاسلامي محمود شاكر
- منهج السنة في الزواج د. محمد الاحمدي ابو النور
- نظام الاسرة في الاسلام د. عبدالرحمن الصابوني
- السلام والاوضاع الاقتصادية الشيخ محمد الغزالي
- نظام الحكم في الاسلام د—محمد عبدالله العربي
- التشريع الجنائي في الاسلام د—محمد عبدالله العربي
- الثقافة الاسلامية المستوى الثالث ٣٠١ محمد المبارك — محمد الغزالي جامعة ام القرى

- الكتب و المراجع التي يوصى بها
- الحضارة الإسلامية : الشيخ عبدالرحمن حسن حبنكة الميداني .
- نظرات في الثقافة الإسلامية : محفوظ عزام
- في ظلال القرآن : سيد قطب
- علم المقاصد الشرعية— د. نور الدين بن مختارالخادمي٠
- المدخل لدراسة الشريعة الاسلامية د٠عبدالكريم زيدان٠
- أساسيات العلوم المعاصرة في التراث الإسلامي : أحمد فؤاد باشا

٤—المراجع الإلكترونية، مواقع الإنترنت...الخ:

http://www.ahlalhdeeth.com/vb/index.php
http://www.tafsir.net/vb/
http://213.150.161.217/kfcris/login.htm

٥—مواد تعليمية أخرى مثل البرامج المعتمدة على الحاسب الآلي/الأسطوانات المدمجة، والمعايير /اللوائح التنظيمية الفنية: التراث الإسلامي، أو المكتبة الشاملة.

و . المرافق اللازمة:

١–المباني (قاعات المحاضرات، المختبرات،...الخ):
قاعة دراسية وعدد من الكراسي والطاولات يكفي لجميع الطلاب في المادة، مكتبة الكلية.
٢–مصادر الحاسب الآلي: معمل تخريج، مكتبة الكترونية.
٣–مصادر أخرى (حددها...مثل: الحاجة إلى تجهيزات مخبرية خاصة، أذكرها، أو أرفق قائمة بها):
لا ينطبق.

ز. تقييم المقرر الدراسي وعمليات تطويره

١–استراتيجيات الحصول على التغذية الراجعة من الطلاب بخصوص فعالية التدريس:
سؤال الطلاب مباشرة نهاية كل محاضرة.
– مقاييس الاختبارات وتقييم النتائج.
٢–استراتيجيات أخرى لتقييم عملية التدريس من قبل المدرس أو القسم :
– التقييم عن طريق المجموعات والأقسام المتناظرة.
– وحدة القياس والتقييم في الجامعة.
– عرض الدرس على بعض الزملاء.
٣–عمليات تطوير التدريس :
– عن طريق الدورات التابعة لوكالة التطوير الجامعي.
– عن طريق الدوريات الصادرة عن المؤسسات التعليمة والتربوية.
– عن طريق تبادل الخبرات التعليمة والفنية بين الأساتذة.
٤– عمليات التحقق من معايير الإنجاز لدى الطالب
– لجنة من القسم بمراجعة إجابات الطلاب وتقدير الدرجات المتحصل عليها.
– تقييم الامتحان والأسئلة المعدة للقياس والتقويم.
٥–صف إجراءات التخطيط للمراجعة الدورية لمدى فعالية المقرر الدراسي والتخطيط لتطويرها:
– تنقيح ومراجعة المقرر كل فصل دراسي.
– العمل على تطوير مفردات المقرر.
– الاستفادة من خبرات الأستاذة في المجموعات المتناظرة.
– الاستفادة من كل جديد لدى الدوريات والمجلات عن طرائق تدريس

سبحانك اللهم وبحمدك وآخر دعواهم أن الحمد لله رب العالمين والله ولي التوفيق

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course title: Electromagnetism 1

Course code: 403201-3

Course Specifications

Institution: **Umm AL – Qura University**	Date : **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Electromagnetism 1 (code: 403201-3)**			
2. Credit hours: **3 Hrs**			
3. Program(s) in which the course is offered. **B.Sc. Pure Physics.** (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course **One of the academic staff member**			
5. Level/year at which this course is offered : **3rd Year / Level 6**			
6. Pre-requisites for this course (if any) : **Classical Physics (403200-4)**			
7. Co-requisites for this course (if any) :			
8. Location if not on main campus: **Main campus and Alzaher**			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?

Describe, in words, the ways in which various concepts in electromagnetism come into play in particular situations; to represent these electromagnetic phenomena and fields mathematically in those situations; and to predict outcomes in other similar situations.

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)

1. Use the mathematics to express the phenomena in electromagnetism.
2. Define the electric field, the electric potential, and electric dipole
3. Calculate the electrostatic field, electrostatic potential of the charge, dipole and multipoles
4. Apply Gauss's law to solve some problems.
5. Apply Poisson's equation to solve some problems
6. Apply Laplace's equation to solve some problems.
7. Define the electric displacement, polarization of the materials, dielectric constant, and electric susceptibility.
8. Calculate the electric field outside a dielectric materials.
9. Calculate the electrostatic electric and potential fields in dielectric materials, microscopic theory of dielectric and electrostatic energy
10. Define the Ferroelectricity phenomena.
11. Calculate the energy density of the electrostatic field.
12. Calculate the energy of a System of Charged Conductors

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

Course Description:

This course deals primarily with a vector calculus based description of static electric field in case of fixed charges, volume and surface charge distribution, dipole, multipole, conductor and dielectric beside the calculation of the electrostatic potentials in each case. The calculation of the electric field by applying Gauss's law for fixed charges and dielectric materials. Also, it concerns the study of the polarization, dielectric constant and the boundary conditions at the interface at the two different dielectric media. The calculation of molecular fields, electrostatic energy and the description of moving charges and steady electric currents are also presented.

1 Topics to be Covered		
Topics	**No of Weeks**	**Contact hours**
❖ **Electrostatics:** 1-Electric Charge 2-Coulomb's law 3-The Electric Field 4-Electrostatic Potential 5-Conductors & Insulators 6-Gauss's Law 7-The Electric Dipole 8-Multipole Expansion	**2**	**6**
❖ **Solution of electrostatic problems:** 1-Poisson's Equation 2-Laplace's Equation 3-Laplaces's Equation in one independent Variable 4-Laplace's Equation in Spherical Coordinates 5-Conducting Sphere in Uniform 6-Cylindrical Harmonics 7-Electrostatic Images 8-Point charge & Conducting Sphere 9-Line charges & Line Images 10-System of Conductors 11-Poisson's Equation.	**4**	**12**
❖ **The Electrostatic Field in Dielectric Media** 1-Polarization 2-Field Outside of a Dielectric Medium 3-The Electric Field inside a Dielectric 4-The Electric Displacement 5-Electric Susceptibility and Dielectric Constant 6-Point Charge in a Dielectric Field 7-Boundary Conditions on the Field Vector 8-Boundary Value Problem Involving Dielectrics 9-Dielectric Sphere in a Uniform Electric Field.	**3**	**9**
❖ **Microscopic Theory of Dielectrics** 1-Molecular Field in Dielectric 2-Induced Dipoles	**2**	**6**

3-Polar Molecules 4-Ferroelectricity		
❖ **Electrostatic Energy** 1-Potential Energy of a Group of Point Charges 2-Energy Density of an Electrostatic Field 3-Energy of a System of Charged Conductors 4-Capacitors.	**1.5**	**4.5**
❖ **Electric Current** 1-Current Density & Equation of Continuity 2-Ohm's Law 3-Steady Currents in continuous Media 4-Microscopic Theory of Conduction.	**1.5**	**4.5**
	15 weeks	**42hrs**

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	-	-	-	-	**45**
Credit	**3**	-	-	-	-	**3**

3. Additional private study/learning hours expected for students per week.	**6**

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 physical quantities, physical phenomena, and basic principles.	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: Board, Power point. 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Discussions during the lectures Exams: a) Quizzes (E-learning) b) Short exams (mid-term exams) c) Long exams (final) d) Oral exams .
1.2	Describe the physical laws and quantities using mathematics		
2.0	**Cognitive Skills**		
2.1	Apply the laws of physics to calculate some quantities.	1. Preparing main outlines for teaching. 2. Following some proofs. 3. Define duties for each chapter 4. Encourage the student to look for the information in different references. 5. Ask the student to attend lectures for practice solving problem.	1. Exams (Midterm, final, quizzes) 2. Asking about physical laws previously taught 3. Writing reports on selected parts of the course. 4. Discussions of how to simplify or analyze some phenomena.
2.2	Solve problems in physics by using suitable mathematics.		
2.3	Analyse and interpret quantitative results.		
2.4	Apply physical principle on day life phenomena.		
2.5	Derive the physical laws and formulas.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-learning to be aware with recent developments in physics	• Search through the internet and the library. • Small group discussion.	• Evaluate the efforts of each student in preparing the report.

3.2	Work effectively in groups and exercise leadership when appropriate.	• Enhance self-learning skills. • Develop their interest in Science through : (lab work, visits to scientific and research institutes).	• Evaluate the scientific reports. • Evaluate the team work in lab and small groups. • Evaluation of students presentations.
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form.	• Incorporating the use and utilization of computer, software, network and multimedia through courses • preparing a report on some topics related to the course depending on web sites	• Evaluating the scientific reports. • Evaluating activities and homework
4.2	Collect and classify the material for the course.		
4.3	Use basic physics terminology in English.		
4.4	Acquire the skills to use the internet communicates tools.		
5.0	**Psychomotor (NA)**		

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	Exercises & Home works	All weeks	10 %
2	Participation in activities lectures	All weeks	10 %
3	Midterm Exam (theoretical)	8th week	30%
6	Final Exam (theoretical)	16th week	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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (3 hrs per week)

E Learning Resources

1. List Required Textbooks Introduction to Electrodynamics by David J. Griffiths, [Prentice-Hall, Inc., 1999], 3rd Edition.
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) • Foundations of Electromagnetic Theory by Reitz, John R., Milford, Frederick J., Christy, Robert W. [Addison-Wesley, 2008] 4th Edition • Electromagnetic Fields and Waves by Paul Lorrain, Dale R. Corson, Francois Lorrain [W. H. Freeman and Company, 1988] 3rd Edition
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc. https://www.khanacademy.org/science/physics
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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board. There are enough laboratories for experimental physics, provided with air conditions, good data show, and experimental equipment.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Course reports
- Course evaluation.

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Revision of student answer paper by another staff member.
- Analysis the grades of students.

3 Processes for Improvement of Teaching

- Preparing the course as PPT.
- Using scientific flash and movies.
- Coupling the theoretical part with laboratory part
- Periodical revision of course content.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department.
- Feedback evaluation of teaching from independent organization.
- Independent evaluation by another instructor that give the same course in another faculty.
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

19- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

20- According to point 1 the plan of improvement should be given.

Name of Instructor: _____ M. BOUSTIMI_____

Signature: _____ Date Report Completed: _____

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Alluqmani

Signature: Saleh Date Received: 23/4/1439

المملكة العربية السعودية
وزارة التعليم العالى
جامعة أم القرى
كلية اللغة العربية

الرقـــــم : .....
التـــــاريخ : .....
المشـفوعات : .....

رقم المقرر	اسم المقرر	الوحدات الدراسية	متطلب سابق
٢-٥٠١١٠١	اللغة العربية	٢	-----

أولا : أهداف المقرر :

١. تزويد الطالب بالقواعد النحوية اللازمة في حياته العلمية والعملية .

٢. تنمية الذوق الأدبي عند الطالب من خلال دراسته التطبيقية للنصوص اللغوية الراقية من قرآن كريم ، وحديث ، وشعر ، ونثر .

٣. تمكين الطالب من التعبير نطقا وكتابة بأسلوب سليم .

٤. ربط الطالب باللغة العربية ؛ لكونها لغة الحضارة الإسلامية العامة.

ثانيا : المنهج :

❖ النحو :

مقدمة : أهمية علوم العربية ، وأهدافها ،وأشهر علمائها وكتبها ، في فروعها المختلفة (اللغوية – النحوية – الصرفية – المعجمية – الأدبية).

- تعريف الجملة العربية وأقسامها (الاسمية والفعلية):
  - انقسام الاسم إلى معرفة ونكرة – ذكر المعارف (الضمائر – أسماء الإشارة – الأسماء الموصولة – أسماء الإشارة) .
  - انقسام الاسم إلى معرب ومبني :
- ذكر المبنيات (الحروف – الأفعال – الضمائر – أسماء الشرط – أسماء الاستفهام – الأسماء الموصولة – أسماء الإشارة) .
- ذكر المعربات (إعراب الاسم المفرد – المثنى – الجموع بأنواعها – الممنوع من الصرف – الأسماء الخمسة – الاسم المقصور – الاسم المنقوص – المضاف إلى ياء المتكلم – الأفعال الخمسة – المضارع المعتل الآخر) .
- الجملة الاسمية (المبتدأ والخبر – كان وأخواتها – إن وأخواتها – ظن وأخواتها).
- الجملة الفعلية (الماضي –المضارع –الأمر- نواصب الفعل المضارع وجوازمه).
- الفضلات (أنواع المفعول المطلق – مواضع تقدم المفعول به وجوباً – شروط الحال - أنواع التمييز – شروط المفعول لأجله – أنواع الاستثناء وأدواته – أقسام المنادى) .

المملكة العربية السعودية
وزارة التعليم العالى
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التـــــاريخ : .....
المشـفوعات : .....

❖ الإملاء :
- أحكام همزة الوصل والقطع .
- أحكام كتابة الهمزة المتوسطة والمتطرفة .

❖ الصرف :
- الفعل المجرد والمزيد (أبنية الثلاثي المجرد – المزيد بحرف – المزيد بحرفين – المزيد بثلاثة – بناء الرباعي المجرد) .
- الميزان الصرفي – بإيجاز – (تعريفه – طريقة ميزان الكلمة المجردة والمزيدة) .
- طريقة الكشف في المعاجم المشهورة (القاموس المحيط – الصحاح – لسان العرب – المصباح المنير – المعجم الوسيط) .

❖ الأدب :
- لمحة موجزة عن الأدب العربي وعصوره (الجاهلي – الإسلامي – الأموي – العباسي – ... إلخ) .
- مراجعة بعض المصطلحات كالجناس – والطباق – والتشبيه – والاستعارة والكناية – بإيجاز – .
- إيراد بعض الأشعار التي تمثل عصور الأدب العربي .

ثالثا : المراجع :

- شرح قطر الندى وبل الصدى لابن هشام الأنصاري .
- جامع الدروس العربية للشيخ مصطفى الغلاييني .
- المحيط لمحمد الأنطاكي .
- شذا العرف في فن الصرف للحملاوي .
- التطبيق النحوي لعبده الراجحي .
- التطبيق الصرفي لعبده الراجحي .
- الأدب الجاهلي والإسلامي لشوقي ضيف .
- البلاغة الواضحة للجارم .
- المعاجم العربية لعبد الله درويش .
- قواعد الإملاء لمحمد عبد السلام هارون .
- الإملاء والترقيم لعبد العليم إبراهيم .

يراعى الإيجاز في شرح مفردات هذا المنهج بما يتفق مع قدرات الطلاب ومدة الفصل الدراسي .

مكة المكرمة ص. ب : ١٣٣٤٤ فاكس : ٥٢٧٠٤٥٧ – ٥٢٨١٢١٢ سنترال ٥٢٧٠٠٠٠ مباشـــر : ٥٢٧٠٤٥١

مطابع جامعة أم القرى

المملكة العربية السعودية
وزارة التعليم العالى
جامعة أم القرى
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الرقـــــم : .....
التـــــاريخ : .....
المشـفوعات : .....

يجب تطبيق فقرات المنهج على نصوص قرآنية وأحاديث نبوية ، وأشعار العرب ونثرها يختارها المدرس هادفة إلى قيم أخلاقية ومعانٍ سامية .

إجراءات تقويم وتحسين المقرر

سيقوم القسم بمراجعة وتقويم وتحسين المقرر بناء على دراسة الملف التنفيذي الذي يقدمه الأستاذ في كل فصل دراسي ، ويحوي هذا الملف ما يأتي :

١. توزيع مفردات المقرر على أسابيع الفصل الدراسي .
٢. رأي الأستاذ في مدى تحقيق مفردات المقرر لأهدافه الموضوعة له .
٣. ما يدوّنه الأستاذ من ملحوظات إيجابية أو سلبية على المقرر .
٤. أبرز المشكلات التي واجهها الأستاذ في أثناء تدريس المقرر .
٥. وسائل تقويم المعرفة والمهارات المرتبطة بالمقرر .
٦. توصيات ومقترحاته لتحسين وتطوير المقرر .

مجالات التعلم في المقرر :

ينظر مقدمة البرنامج

تقويم الطلاب في المقرر :

الجدول الزمني لمهام تقويم الطلاب خلال الفصل الدراسي

رقم التقييم	طبيعة مهمة التقييم	الأسبوع المستحق	نسبة الدرجة إلى درجة التقييم النهائي
١	اختبار تحريري دوري	السابع	%٢٠
٢	واجب منزلي	الرابع	%١٠
٣	اختبار قصير	العاشر	%١٠
٤	الامتحان النهائي	الأخير	%٦٠

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course title: Modern Physics

Course code: 4032150-4

Course Specifications

Institution: **Umm AL – Qura University**	Date : **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Modern Physics (code: 4032150)**			
2. Credit hours: **4 Hrs**			
3. Program(s) in which the course is offered. **BSc Physics.** (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course **One of the academic staff member**			
5. Level/year at which this course is offered : **5th Level**			
6. Pre-requisites for this course (if any) : ---			
7. Co-requisites for this course (if any) : ---			
8. Location if not on main campus: **Main campus and Alzaher**			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course? This course is designed to study and consolidate the modern physics concepts in the branches of physics such as The relativity, the black body radiation, the particles properties of waves, wave properties of particles and the atomic structure.
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) 1- Outlines of the modern physics laws, principles and the associated proofs. 2. Highlighting the day life applications whenever exist. 3. Encourage the students to see more details in the international web sites and reference books in the library. 4- Encourage the student to build an example of different experiments related to course 5- Frequently check for the latest discovery in science.

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

Course Description: This course will cover the principle of the modern physics concepts in the branches of physics such as The relativity, the black body radiation, the particles properties of waves, wave properties of particles and the atomic structure.

1 Topics to be Covered

Topics	No of Weeks	Contact hours
❖ **THE SPATIAL THEORY OF THE RELATIVITY** 1- Introduction, 2- Reference frame, 3- Inertial reference frame, 4- Galilean relativity. 5- Einstein's postulate of relativity, 6- Relativity of the simultaneity, 7- Time dilatation, length contraction, 8- Lorentz transformations, 9- Relativistic velocity transformations. 10- Relativistic mechanics,	**3**	**3**

11- Mass, 12- Energy, 13- transformation of energy, 14- Momentum and force, 15- Doppler effect, 16- Relativistic collisions.		
❖ **BLACK BODY RADIATION** 6- radiation of heated objects, 7- thermal radiation, 8- cavity radiation treated with classical physics, 9- UV catastrophe, 10- Planck's solution, 11- quantum of energy.	**3**	**3**
❖ **PARTICLE PROPERTIES OF WAVES** 1- The photoelectric effect, 2- The quantum theory of light, 3- X rays X-ray diffraction, 4- The Compton effect, 5- Pair production, 6- Gravitational red shift.	**3**	**3**
❖ **WAVE PROPERTIES OF PARTICLES** 1- De Broglie waves, 2- Wave function, 3- De Broglie wave velocity, 4- Phase and group velocities, 5- The diffraction of particles. 6- The uncertainty principle, 7- Applications of the uncertainty principle, 8- The wave-particle duality.	**2**	**3**
❖ **ATOMIC STRUCTRUE** 1- Atomic models, 2- Alpha-particle scattering, 3- The Rutherford scattering formula. 4- Nuclear dimensions, 5- Electron orbits, 6- Atomic spectra, 7- Energy levels and spectra, 8- Nuclear Motion, 9- Atomic excitation, 10- The correspondence Principle.	**3**	**3**
❖ **Exercises and Solved problems**	**1**	**3**
	15 weeks	**45hrs**

Practical part:

2. Safety and Security at the lab.
3. Introduction to the Lab.
4. Determination of e/m for electron
5. Determination of Planck's constant
6. Determination of ionization Potential
7. Study of Palmer series of Hydrogen lamp
8. Electron Diffraction: Thomson Experiment
9. Transmission & Absorption of X-ray
10. Franck Hertz experiments
11. Zeeman effect
12. Verification of Bragg law
13. Millikan's Experiment
14. Stefan-Boltzmann's law

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**		**42**			**87**
Credit	**3**		**1**			**4**

3. Additional private study/learning hours expected of students per week.	**4**

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 physical quantities, physical phenomena, and basic principles.	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: Board, Power point. 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Discussions during the lectures Exams: a) Quizzes (E-learning) b) Short exams (mid-term exams) c) Long exams (final) d) Oral exams .
1.2	Describe the physical laws and quantities using mathematics		
1.3	Determine the physical quantities at the Lab.	1. Doing team research or team project. 2.Doing team work to perform some experiments 3. Perform the experiments correctly. 4. Demonstrate the results correctly. 5. Write the reports about the experiment. 6. Discussion with the student about the results	Writing scientific Reports. Lab assignments Exam.
2.0	**Cognitive Skills**		
2.1	Apply the laws of physics to calculate some quantities.	1. Preparing main outlines for teaching. 2. Following some proofs. 3. Define duties for each chapter 4. Encourage the student to look for the information in different references. 5. Ask the student to attend lectures for practice solving problem.	1. Exams (Midterm, final, quizzes) 2. Asking about physical laws previously taught 3. Writing reports on selected parts of the course. 4. Discussions of how to simplify or analyze some phenomena.
2.2	Solve problems in physics by using suitable mathematics.		
2.3	Analyse and interpret quantitative results.		
2.4	Apply physical principle on day life phenomena.		
2.5	Derive the physical laws and formulas.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-learning to be aware with recent developments in physics	• Search through the internet and the library. • Small group discussion. • Enhance self-learning skills. • Develop their interest in Science through : (lab work, visits to scientific and research institutes).	• Evaluate the efforts of each student in preparing the report. • Evaluate the scientific reports. • Evaluate the team work in lab and small groups. • Evaluation of students presentations.
3.2	Work effectively in groups and exercise leadership when appropriate.		
4.0	**Communication, Information Technology, Numerical**		

4.1	Communicate effectively in oral and written form.	• Incorporating the use and utilization of computer, software, network and multimedia through courses • preparing a report on some topics related to the course depending on web sites	• Evaluating the scientific reports. • Evaluating activities and homework
4.2	Collect and classify the material for the course.		
4.3	Use basic physics terminology in English.		
4.4	Acquire the skills to use the internet communicates tools.		
5.0	**Psychomotor**		
5.1	Use experimental tools safely and correctly.	Follow up the students in lab and during carryout all experimental work.	• Practical exam. • Giving additional marks for the results with high and good accuracy
5.2	Determine the physical quantity correctly at the Lab.		

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	Exercises & Home works	All weeks	5 %
2	Participation in activities lectures and labs	All weeks	5 %
3	Midterm Exam (theoretical)	8th week	30%
4	Lab. Reports (Practical)	11th week	5%
5	Final Exam (Practical)	15th week	15%
6	Final Exam (theoretical)	16th week	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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (4hrs per week)

E Learning Resources

1. List Required Textbooks
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) 1- Jeremy Bernstein, Paul Fishbane and Stephen Gasiorowicz, Modern Physics, 2-Hardback (2000). 2- Randy Harris, Modern Physics (2nd Edition), International Edition 3- A. Beiser (2003). Concepts of Modern Physics (6th ed.). McGraw-Hill
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board. There are enough laboratories for experimental physics, provided with air conditions, good data show, and experimental equipment.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each classroom and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Classroom and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Revision of student answer paper by another staff member.
- Analysis the grades of students.

3 Processes for Improvement of Teaching

- Preparing the course as PPT.
- Using scientific flash and movies.
- Coupling the theoretical part with laboratory part
- Periodical revision of course content.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department.
- Feedback evaluation of teaching from independent organization.
- Independent evaluation by another instructor that give the same course in another faculty.
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

According to point 1 the plan of improvement should be given.

Name of Instructor: _____A. TIMOUMI_____

Signature: _____ Date Report Completed: _____

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Alluqmani

Signature: Saleh Date Received: 23/4/1439

Level 6

403389-3 Physics of Medical Imaging

403344-3 Quantum Mechanics I

403386-4 Physics of radiation therapy I

403385-4 Medical radiation Physics I

403390-2 Physics Ultrasound in Medicine

403388-2 Radiation Protection

403391-1 Computing in Medicine

601401-2 Islamic Culture IV

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title:
Physics of Medical Imaging

Course Coordinator: Dr. Hanan Amer

Course code: 403389-3

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17-4-1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Physics of Medical Imaging (Code: 403389-3)**			
2. Credit hours: **3 (3+0+0) Hrs**			
3. Program(s) in which the course is offered. **B.Sc Medical Physics** (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course **Dr. Hanan Amer**			
5. Level/year at which this course is offered: **6th Level / 3rd Year**			
6. Pre-requisites for this course (if any): **Physics of Radiation Effects (403384-2)**			
7. Co-requisites for this course (if any): **NIL**			
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	✓	What percentage?	60%
b. blended (traditional and online)	✓	What percentage?	20%
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?

At the end of this course, the student should be able to:

- Describe the physics principles underlying the operation of medical imaging equipment.
- List, in words, merits and drawbacks of each imaging modality.
- Demonstrate an understanding of and apply mathematical methods of image construction and processing
- Compare the different methods of image processing of different modalities.
- Demonstrate an understanding of aspects of clinical applications of imaging modalities;
- Interpret the images and state the artifacts of each imaging modality

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)

To improve the student\s expert in the field of Health Physics
1- Cooperate with Hospitals to increase student's expert in field
2. Increase the students' open discusstion with radiation experts in the department.
3. Iamge J software program is applied on some imaging modalities to simulate the performance of image processing as in the hospital
3. Encourge students to register to webinars and worshops related to the meical imaging modalities offered hospitals and medical organisations in KSA, in addition to that offered online by IAEA.
4- Encourage the student to write frequently report about different topics in field using references in the liberary and the SDL
5- Frequently updating of the course topics

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

Course Description:
This course introduces the main methods of medical imaging, namely X-ray radiography, computed tomography (CT), magnetic resonance imaging (MRI), positron emission tomography (PET) and single photon emission computed tomography (SPECT). It enables students to develop an understanding of the physics principles underlying these imaging techniques and an awareness of their clinical applications. It also discusses the mathematical principle involved in image formation and processing and provides experience in their use.

1 Topics to be Covered		
Topics	**No of Weeks**	**Contact hours**
❖ **Introduction to digital image** • processing • Digital images • Image quality • Basic image operations	**2**	**6**
❖ **X-ray Radiography** • X-ray tube • Interaction with matter • X-ray detectors • Dual-energy imaging • Image quality • Equipment • Clinical use • Biologic effects and safety	**3**	**9**
❖ **X-ray Computed Tomography** • X-ray detectors in CT • Imaging • Cardiac CT • Dual-energy CT • Image quality • Equipment • Clinical use • Biologic effects and safety	**3**	**9**
❖ **Magnetic resonance imaging** • Physics of the transmitted signal • Interaction with tissue • Signal detection and detector • Imaging • Image quality • Equipment • Clinical use • Biologic effects and safety	**3**	**9**

❖ **Nuclear Imaging (PET/SPECT)** • image quality • Equipment • Clinical use • Biologic effects and safety.	**3**	**9**
❖ **Students Presentations in Selected Health Physics Topics**	**1**	**3**
	15 weeks	**45 hrs**

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**					**45**
Credit	**3**					**3**

3. Additional private study/learning hours expected of students per week. **6**

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	**List the requirements for each imaging modality**	5. Lectures 6. Tutorials 7. Individual Assignment 8. Discussions	h) Solve some example during the lecture. i) Quizzes j) Short exams (mid- term exams) k) Long exams (final) l) Discussions during the lectures. m) Home work.
1.2	**Recognize the basic physical principles of different imaging modalities.**		
1.3	**Outline the merits and drawbacks of each imaging modality**		
2.0	**Cognitive Skills**		
2.1	**The ability Solve problems related to the mathematical principles of the imaging modality**	4. Analatyical problems in field 5. Individual and Group Assigments 6. Group Discussions	h) Aissgnments included some open end tasks i) Open ended tasks (Image analyzation) j) Image j application on some images of different modalities k) Homework l) Final exam
2.2	**The ability to Analyze different artefacts of images of different imaging modalities**		

2.3	**The ability Compare between the properties of different imaging modes and their medical applications.** **.**		m) Short exams n) Reports
3.0	**Interpersonal Skills & Responsibility**		
3.1	**Evaluate image quality of different imaging modalities**	5. Writing an essay 6. Presentations in some selected topics 7. Small Group Discussion. 8. Visits to Hospitals to Improve Students' Expert in Field	f) Essay (Group Assessment) g) Presentations (individual and Group Assessment) h) Homework i) Final exam j) Report in field (Individual Assessment)
3.2	**Choose the appropriate imaging modalities for selected clinical situations**		
4.0	**Communication, Information Technology, Numerical**		
4.1	**Demonstrate the image processing using ImageJ software.**	5. Group Discussions 6. Reports 7. Presentations 8. Accidental Case Study	d) Essay (Group Assessment) e) Presentations (individual and Group Assessment) f) Report in field (Individual Assessment) g) Image quality evaluation using ImageJ software
4.2	**Interpret the difference in image quality of different imaging modes**		
4.3	**Illustrate the Protocol of optimum setup of different imaging modes for selected clinical situations**		
5.0	**Psychomotor**		
5.1	N/A	N/A	N/A

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	Exercises, Homeworks, in-class problem solving, an essay individual or in groups, and presentations.	Weekly	10 %
2	1st Class Test	7th	10%
3	2nd Class Test	14th	10%
4	Final Practical Test	15th	20%
5	Final Exam	16th -17th	50%

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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (4hrs per week)

E Learning Resources

1. List Required Textbooks

3. William R. Hendee and Russell E. Ritenour "Medical Imaging Physics" 4th Eds. Wiely-Liss. **2002**. (Electronic + Hard Copies)
2. Michael E. Phelps "PET: Physics, Instrumentation, and Scanners", 1st Eds., Springer, **2006** (Electronic Copy)
3. Anatoliy Granov, Leonid Tiutin and Thomas Schwarz. "Positron Emission Tomography", 1st Eds., Springer, **2013**. (Electronic copy)

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

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

3- Augusto Giussani and Christoph Hoeschen " Imaging in Nuclear Medicine ", 1st Ed., Springer, **2013**.
4- Paul Suetens. "Fundamentals of Medical Imaging", 2nd Ed., Cambridge University Press, **2009**.

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

- http://www.diagnosticimaging.com/
- http://www.who.int/diagnostic_imaging/en/
- https://imagej.nih.gov/ij/
- https://www.iaea.org/newscenter/multimedia/videos/safe-medical-imaging-for-children
- https://www.iaea.org/topics/diagnosis-of-diseases
- https://www.radiologyinfo.org/en/submenu.cfm?pg=test-treatment

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. N/A

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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Course reports

- Course evaluation.

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Revision of student answer paper by another staff member.
- Analysis the grades of students.

3 Processes for Improvement of Teaching

- Preparing the course as PPT.
- Using scientific flash and movies.
- Annual updating of course content.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department..
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

21- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

22- According to point 1 the plan of improvement should be given.

Name of Instructor: _____

Program Coordinator: **Saleh M. Alluqmani**

Signature: Saleh Date Received: **5/3/1439 H**

Head of Department: **Saleh M. Alluqmani**

Signature: Saleh Date Received: **17/4/1439 H**

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course title: Principles of Quantum Mechanics

Course code: 403344-3

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Quantum Mechanics 1 (Code: 403344-3)**			
2. Credit hours: **3 Hrs**			
3. Program(s) in which the course is offered. **B.Sc Physics** (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course **Dr.Abdelrahman Lashin**			
5. Level/year at which this course is offered: **5th Level /3rd Year**			
6. Pre-requisites for this course (if any): **Theoretical Methods in Physics (1) (403241-2)**			
7. Co-requisites for this course (if any): **NIL**			
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?

Explain that, the quantum mechanics is a more general theory which contains classical mechanics as a limiting case and in fact historically quantum mechanics was developed by analogy with classical theory. Demonstrate theoretical knowledge and have practical skills and personal attributes that will be required for quantum mechanics. Demonstrate an ability to initiate and sustain in-depth research relevant to quantum mechanics.

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)

1- Outlines of the physical laws, principles and the associated proofs.
2. Highlighting the day life applications whenever exist.
3. Encourage the students to see more details in the international web sites and reference books in the library.
4- Encourage the student to build an example of different experiments related to course
5- Frequently check for the latest discovery in science

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

Course description:
1- **Wave-Particle Duality and Uncertainty**: Probability interpretation for wave-functions; wave packets, momentum representation; group velocity and phase velocity for a free particle, dispersion and time evolution; uncertainty principle for position and momentum.
2- The Schrödinger Equation: Introduction to operators and conjugate variables; eigenfunctions and eigenvalues, time-dependent and -independent wave equations; probability density and current; stationary states.
3- **Unbound Particles:** solutions for a free particle, beams, one-dimensional potentials; boundary conditions; reflection and transmission for a square potential step and barrier; tunnelling.
4- **Bound Particles**: Particle in an infinite potential well; zero-point energy; orthogonality and parity of eigenfunctions, normalization; eigenfunction expansions. Finite potential well. Harmonic oscillator. 3D box; separation of variables; degeneracy.
5- **Operator Methods:** Observables and operators; Hermitian operators. Dirac notation, eigenstates and eigenvalues. Correspondence of observables with operators; orthogonality and completeness of eigenstates. Postulates of quantum mechanics. Probability of outcomes of

measurements; expectation values. Compatible and incompatible observables; commuting operators and simultaneous eigenstates; non-commuting operators; generalised uncertainty relations; minimum uncertainty states. The harmonic oscillator; ladder operators, eigenstates, equipartition. Time dependence; evolution of expectation values. Ehrenfest's theorem. Time-energy uncertainty relation. Symmetry operators and conserved quantities.
6- **Quantum Mechanics in Three Dimensions:** General formulation. Spherically symmetric systems; orbital angular momentum; angular momentum operators; eigenvalues and eigenstates; orbital magnetic moment. Eigenfunctions; spherical harmonics; parity. Rotational invariance and angular momentum conservation. The three-dimensional harmonic oscillator; quantum numbers and degeneracies. Central potentials and conservation of angular momentum. Separation of variables; the radial equation. The hydrogen atom; quantum numbers; overall wavefunctions. Non-central potentials.
7- **Spin:** Stern-Gerlach experiment and spin; spin eigenstates. Matrix methods applied to angular momentum; Pauli matrices; spinors. Combining spin and orbital angular momentum; combining spins; singlet and triplet states.

1 Topics to be Covered

Topics	No of Weeks	Contact hours
❖ **Wave Particle Duality, Probability, and the Schrodinger Equation** • Radiation as Particles, Electrons as Waves. • Plane Waves and Wavepackets. • The Probability Interpretation of the Wavefunction. • The Schrodinger Equation. • The Heisenberg Uncertainty Relations. • The Probability Current. • Expectation Values and the Momentum in Wave Mechanics; The Momentum in Wave Mechanics, Wavefunction in Momentum Space.	**2**	**8**
❖ **Eigenvalues, Eigenfunctions, and the Expansion Postulate** • The Time-Independent Schrodinger Equation. • Eigenvalue Equations. • The Eigenvalue Problem for a Particle in a Box. • The Expansion Postulate and Its Physical Interpretation. • Momentum Eigenfunctions and the Free Particle; Normalization of the Free Particle Wave Function, Degeneracy. • Parity.	**2**	**8**
❖ **One-Dimensional Potentials** • The Potential Step. • The Potential Well.	**2**	**8**

• The Potential Barrier. • An Example of Tunneling. • Bound States in a Potential Well. • The Harmonic Oscillator.		
❖ **The General Structure of Wave Mechanics** • Eigenfunctions and Eigenvalues; The Hamiltonian Operator. • Other Observables. • Vector Spaces and Operators. • Degeneracy and Simultaneous Observables. • Time Dependence and the Classical Limit.	**2**	**8**
❖ **Angular Momentum** • The Angular Momentum Commutation Relations. • Raising and Lowering Operators for Angular Momentum. • Representation of $\lvert \lambda, \mathbf{m} \rangle$ States in Spherical Coordinates.	**1**	**4**
❖ **The Schrodinger Equation in Three Dimensions and the Hydrogen Atom** • The Central Potential. • The Hydrogen Atom. • The Energy Spectrum. • The Free Particle.	**2**	**8**
❖ **Spin** • Eigenstates of Spin 1/2. • The Intrinstic Magnetic Moment of Spin 1/2 Particles. • Addition of Two Spins. • The Addition of Spin 1/2 and Orbital Angular Momentum. • General Rules for Addition of Angular Momenta.	**1.5**	**6**
❖ **Matrix Representation of Operators** • Matrices in Quantum Mechanics. • Matrix Representation of Angular Momentum Operators. • General Relations in Marix Mechanics. • Matrix Representation of Spin 1/2.	**1.5**	**6**
	14 weeks	**56 hrs**

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	**-**	**-**	**-**	**-**	**70**
Credit	**3**	**-**	**-**	**-**	**-**	**3**

3. Additional private study/learning hours expected for students per week.	**6**

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 physical quantities, physical phenomena, and basic principles.	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: Board, Power point. 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Discussions during the lectures Exams: a) Quizzes (E-learning) b) Short exams (mid-term exams) c) Long exams (final) d) Oral exams .

1.2	Describe the physical laws and quantities using mathematics		
2.0	**Cognitive Skills**		
2.1	Apply the laws of physics to calculate some quantities.	1. Preparing main outlines for teaching. 2. Following some proofs. 3. Define duties for each chapter 4. Encourage the student to look for the information in different references. 5. Ask the student to attend lectures for practice solving problem.	1. Exams (Midterm, final, quizzes) 2. Asking about physical laws previously taught 3. Writing reports on selected parts of the course. 4. Discussions of how to simplify or analyze some phenomena.
2.2	Solve problems in physics by using suitable mathematics.		
2.3	Analyse and interpret quantitative results.		
2.4	Apply physical principle on day life phenomena.		
2.5	Derive the physical laws and formulas.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-learning to be aware with recent developments in physics	• Search through the internet and the library. • Small group discussion. • Enhance self-learning skills. • Develop their interest in Science through : (lab work, visits to scientific and research institutes).	• Evaluate the efforts of each student in preparing the report. • Evaluate the scientific reports. • Evaluate the team work in lab and small groups. • Evaluation of students presentations.
3.2	Work effectively in groups and exercise leadership when appropriate.		
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form.	• Incorporating the use and utilization of computer, software, network and multimedia through courses • preparing a report on some topics related to the course depending on web sites	• Evaluating the scientific reports. • Evaluating activities and homework
4.2	Collect and classify the material for the course.		
4.3	Use basic physics terminology in English.		
4.4	Acquire the skills to use the internet communicates tools.		
5.0	**Psychomotor (NA)**		
5.1	N/A	N/A	N/A

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	Exercises & Home works in-class problem solving, and an essay	Weekly	20 %
2	1st Class Test Exam	8th week	15 %
3	2nd Class Test Exam	11th week	15%
4	Final Exam	16th week	50%

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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (4hrs per week)

E Learning Resources

1. List Required Textbooks

1- Griffiths, David J. *Introduction to Quantum Mechanics*. 2nd ed. Upper Saddle River, NJ: Pearson Prentice Hall, 2004.

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

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

1- Sakurai, J. J. *Modern Quantum Mechanics*. Revised Edition. Reading, MA: Addison-Wesley; 1994.
2- Quantum Physics, Gasiorowicz S. 3rd ed. Hoboken, NJ: Wiley, 2003.
3- Cohen-Tannoudji, Claude. *Quantum Mechanics*. 2 vols. New York, NY: Wiley, 1977. ISBN: 9780471164326.

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

- http://en.wikipedia.org/wiki/Quantum Mechanics/
- http://www.dmoz.org/Science/Physics/Quantum Mechanics/

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. N/A

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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Revision of student answer paper by another staff member. • Analysis the grades of students.
3 Processes for Improvement of Teaching • Preparing the course as PPT. • Using scientific flash and movies. • Periodical revision of course content.
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) • The instructors of the course are checking together and put a unique process of evaluation. • Check marking of a sample of papers by others in the department.

- Feedback evaluation of teaching from independent organization.
- Independent evaluation by another instructor that give the same course in another faculty.
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

23- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

24- According to point 1 the plan of improvement should be given.

Name of Instructor: _____Abdelrahman Lashin_____

Signature: _____ Date Report Completed: _____

Program Coordinator: **Saleh M. Alluqmani**

Signature: Saleh Date Received: **5/3/1439 H**

Head of Department: **Saleh M. Alluqmani**

Signature: Saleh Date Received: **17/4/1439 H**

كليه العلوم التطبيقيه
Faculty of Applied Sciences

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title: Physics of Radiation Therapy (1)

Course Coordinator: Prof. Dr. Faiz

Course code: 403386-4

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date : **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Physics Radiation Therapy (1) (Code: 403386)**
2. Credit hours: **4 (3+1+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Medical Physics**

   (If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course

   One of medical physics academic staff members
5. Level/year at which this course is offered : **6th Level /3rd Year**
6. Pre-requisites for this course (if any): **Physics of Radiation Effects (403384-2)**
7. Co-requisites for this course (if any): **NIL**
8. Location if not on main campus: **Main campus**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	✓	What percentage?	70%
b. blended (traditional and online)	✓	What percentage?	15%
c. e-learning	✓	What percentage?	15%
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course?

On completion of this course, students should be able to:

- Describe the basic principles underlying radiotherapy methods;
- Explain the principles of radiotherapy equipment;
- Define the characteristics of clinical beams and their measurement;
- Describe dosimetry measurements used in radiotherapy;
- Perform basic treatment planning in radiotherapy;
- Perform basic QC for equipment in radiotherapy;
- Describe the use of sealed and unsealed sources in radiotherapy;
- Discuss a range of clinical applications.

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)

To improve the student\s expert in the field of Physics of Radiation Therapy

1- Cooperate with Hospitals to increase student's expert in field
2. Increase the students' open discusstion with radiation experts in the department.
3. Encourge students to register to webinars and worshops related to the radiotherapy physics offered hospitals and medical organisations in KSA, in addition to that offered online by IAEA.
4- Encourage the student to write frequently report about different topics in field using references in the liberary and the SDL
5- Frequently updating of the course topics

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

Course Description:

This course provides the necessary practical and theoretical background for the support of a radiotherapy physics service within radiotherapy. The course provides the bais for understanding physical principles within radiotherapy, focusing on clinical application. Important topis are: Equipment for generating/delivering ionizing elctron- and photon radiation, clinical radiation dosimetry, characteristics and specifications of radiation fields, treatment planning (volume definitions, field setup, fractionations, modern techniques and dose calculation algoritms), quality assurance, and posibilities and limtations related to treatment modalities like brachytherapy and particle therapy

1 Topics to be Covered		
Topics	**No of Weeks**	**Contact hours**
❖ **Radiation in the Treatment of Cancer** • Kilovoltage x-ray Units • Linear Accelerator • Cobalt Machines • Simulator	**2**	**6**
❖ **Dose Distribution and Scatter analysis** • Phantoms • Depth Dose Distribution • Percentage Depth Dose • Tissue-Air Radio • Scatter-air Ratio	**2**	**6**
❖ **Patient dose Computation Methods** • Acquisition of patient data • Treatment simulation • Source to axis distance and isocentric techniques	**2**	**6**
❖ **A system of Dosimetric calculations** • Dose calculation parameters • Practical applications (a)Accelerator Calculations (b)Cobalt-60 Calculations (c) Irregular Fields (D)Asymmetric Fields	**2**	**6**
❖ **Treatment Planning I:Isodose Distribution** • Isodose chart • Measurement of isodose curves.	**1**	**3**

❖ **Treatment Planning: Patient data, Corrections, and set-up** • parameters of isodose curves • Wedge filters • Combination of radiation fields • Wedge field techniques • Tumor dose specification for external photon beams	**2**	**6**
❖ **Treatment Planning: Field Shaping, Skin dose, and Field Separation.** • Field blocks • Field shaping • Skin dose • Separation of adjacent fields	**1**	**3**
❖ **Electron beam Therapy.** • Electron interactions • Determination of absorbed dose • Characteristics of clinical electron beams • Field shaping	**1**	**3**
❖ **Dose Fractionation in radiotherapy.** ❖ **Quality Assurance**	**1**	**3**
❖ **Students Presentations in Selected Radiotherapy Topics**	**1**	**3**
	15 weeks	**45 hrs**

❖ **Labaratory Experiments.**

Practicing the protocol for the determination of absorbed dose from high-energy photon and electron beams. Performing dosimetry and quality assurance for radiation therapy machines. Participating in the treatment plans of cancer patients.

- Dose calculation and output check of Cobalt unit
- Dose calculations and output check of LINAC
- Manual Planning 1 (patient contouring – treatment plan verification – isodose distribution – radiation fields arrangements)
- Manual Planning 2 (weighing of radiation fields – correction of surface irregularities – isodose shift method – correction for tissue inhomogenities)
- Computerized planning (treatment volume and irradiated volume definitions – organ at risk – volume dose histogram – modal doses – maximum dose – hot spot – MIRD method)

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**		**45**			**90**
Credit	**3**		**1**			**4**

3. Additional private study/learning hours expected for students per week.	**8**

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	**List the patient dose computation methods**	9. Lectures 10.Tutorials 11.Individual Assignment 12.Discussions	n) Solve some example during the lecture. o) Quizzes p) Short exams (mid- term exams) q) Long exams (final) r) Discussions during the lectures. s) Home work.
1.2	**Recognize the basic physical principles of radiotherapy treatment planning**		
1.3	**Outline the merits and drawbacks of each equipment used in radiotherapy**		
2.0	**Cognitive Skills**		
2.1	**The ability Solve problems related to the patient dose calculation**	7. Analatyical problems in field	o) Aissgnments included calculation of patient dose in selscted clinical situations

2.2	**The ability to choose the appropriated field arrangement technique for treatment planning**	8. Individual Assigments 9. Group Assigments 10. Lab work	p) Open ended tasks (clinical treatment plans problem) q) Lab exam r) Homework s) Final exam t) Short exams u) Reports
2.3	**The ability Compare between the electron and photon beam therapy.** .		
3.0	**Interpersonal Skills & Responsibility**		
3.1	**Demonstrate the protocol for both manual and computerized radiotherapy treatment plannig**	9. Writing an essay 10. Presentations in some selected topics 11. Small Group Discussion. 12. Visits to Hospitals to Improve Students' Expert in Field	k) Essay (Group Assessment) l) Presentations (individual and Group Assessment) m)Lab exam n) Homework o) Final exam p) Report on field (Individual Assessment)
3.2	**Choose the appropriate field arrangements for selected clinical treatment plans**		
4.0	**Communication, Information Technology, Numerical**		
4.1	**Demonstrate the dose distribution using manual and computerized methods.**	9. Group Discussions 10. Reports 11. Presentations 12. Treatment plans of selected clinical situation 13. Simulation radiotherapy treatment planning	h) Essay (Group Assessment) i) Presentations (individual and Group Assessment) j) Report in field (Individual Assessment) k) Treatment plans evaluation using some websites
4.2	**Interpret the difference in isodose distribution of different field arrangements of selected clinical treatment plans**		
4.3	**Illustrate the Protocol of optimum setup of quality assurance for selected clinical situations**		
5.0	**Psychomotor**		
5.1	N/A	N/A	N/A

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	Exercises & Home works	All weeks	5 %
2	Lab. Part	All weeks	20 %
3	Activity (reports)	All week	5%
4	Midterm 1	6th week	10%
5	Midterm 2	10th week	10%
6	Final Exam	16th week	50%

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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks

1. F. M. Khan, "The Physics of Radiation Therapy", 5th Edition, Lippincott Williams and Wilkins,U.S.A.,**2015.** (Electronic + Hard Copies).
2. E. B. Podgorsak, (Editor), Radiation Oncology Physics: A Handbook for Teachers and Students, IAEA , **2005**. (electronic copy)

(http://www-pub.iaea.org/MTCD/publications/PDF/Pub1196_web.pdf)

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

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

1- Philip Mayles,Alan Nahum"handbook of radiotherapy physics:theory and practice" Taylor&Francis, **2007.**

2- Faiz.M.Khan "Treatment Planning in radiation Oncology" 3rd aedition,Lippincott Williams&Wilkins, **2011**.

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

- http://www.ennovations.co.uk/p/20/interactive-radiotherapy-planning-for-students-irps-version-401
- http://radonc.uams.edu/research/medical-physics-research/dicoman/
- https://www.iaea.org/topics/cancer-treatment-radiotherapy
- https://www.radiologyinfo.org/en/info.cfm?pg=ebt
- https://www.cancer.gov/about-cancer/treatment/types/radiation-therapy/radiation-fact-sheet

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. N/A

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.)

There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board.

2. Computing resources (AV, data show, Smart Board, software, etc.)

In each class room and laboratories, there is a data show, and board.

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

Each Class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Course reports
- Course evaluation.

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Revision of student answer paper by another staff member.
- Analysis the grades of students.

3 Processes for Improvement of Teaching

- Preparing the course as PPT.
- Using scientific flash and movies.
- Annual updating of course content.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department..
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

25- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

26- According to point 1 the plan of improvement should be given.

Name of Instructor: _____

Signature: _____ Date Report Completed: **20/2/1439 H**

Name of Field Experience Teaching Staff : **Dr/ Faiz Elghoriby**

Program Coordinator: **Saleh M. Alluqmani**

Signature: _____ Date Received: **5/3/1439 H**

Head of Department: **Saleh M. Alluqmani**

Signature: Saleh Date Received: **17/4/1439 H**

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title: Medical Radiation Physics 1

Course Coordinator: Dr. Taha Alfawwal

Course code: 403385-4

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Medical Radiation Physics 1 (Code: 4032280-4)**
2. Credit hours: **4 (3+1+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Medical Physics.**
(If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course
Dr. Taha Alfawwal
5. Level/year at which this course is offered: **3rd Year/Level 6**
6. Pre-requisites for this course (if any): **Physics of radiation effect (403284-2)**
7. Co-requisites for this course (if any): **NIL**
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**
9. Mode of Instruction (mark all that apply)

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

Comments:

The mode of instruction is distributed and used two items [Traditional classroom with 80%, and 20% blended (traditional and online)].

B Objectives

1. What is the main purpose for this course?

At the end of this course the students will be able to:

- Explain general aspects of radioactive decay processes; Beta decay, Alpha decay, electron capture.
- Outline of the types of radiation Sources; radioactivity, Transformation mechanisms, Transformation Kinetics.
- Explain Interactions of ionizing radiation with Matter by studying the interactions of alpha and beta charged particles with Matter and interactions of gamma electro charged particles with Matter.

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)

Increased use of web based reference material, and may changes in content as a result of new research in the field.

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

Course Description:

This course is interested in study the interactions and energy deposition by ionizing radiation in matter; concepts, quantities and units in radiological physics. The use of radioactive sources for radiotherapy including: materials used, source construction, dosimetry theory and practical application, dosimetric systems, localization and reconstruction. The course covers low dose rate, high dose rate and permanently placed applications.

1 Topics to be Covered

Topics	No of Weeks	Contact hours
Introduction Scientific Fundamental , Excitation and Ionization Characteristic x-ray. Binding Energy The chart of nuclides	**1 week**	3 hrs
General Aspects of Radioactive Decay Processes; Beta decay, Alpha decay, Electron capture etc ..	**3 Weeks**	**6 hrs**
The radiation Sources ;Radioactivity, Transformation Mechanisms, Transformation Kinetics	**1 Week**	**3 hrs**
The Activity; Naturally Occurring Radiation, Serial Transformation	**2 Week**	**6 hrs**

Machine sources such as X Rays machine: Accelerated Charged Particle Linear Accelerator **1st class Test**	**2 Week**	**6 hrs**
Interaction of radiation with matter Alpha particle interactions, Beta particle interactions Specific ionization, Mass stopping power Linear energy transfer and Bremsstrahlung	**3 Weeks**	**9 hrs**
Internal Conversion Electrons Interaction of gamma radiation with matter Interaction of neutrons with matter	**1 week**	**3 hrs**
Radiation biology Radiation protection concepts and applications **2nd Class Test Exam**	**2 week**	**6 hrs**
	15 weeks	**45 hrs**

Practical part:

- The Human arm model--1
- The Human arm model--2
- Fluids Motion (Simulation)
- Doppler effect (Simulation)
- Action potential (Simulation)
- Eye vision
- X-ray
- Radioactive Dating (Simulation)

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	**-**	**42**	**-**	**-**	**87**
Credit	**3**	-	**1**	**-**	**-**	**4**

3. Additional private study/learning hours expected of students per week. **6**

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	a1 . Outline of the general aspects of radioactive decay processes; Beta decay, Alpha decay, Electron capture	Manage the chapter by the general idea of the meaning of radioactive decay process and the benefit of it. Demonstrate the course information and principles through lectures.	1. Home work 2. Interactive discussion 3. Short exam1 4. Short exam2 5. Final exam
1.2	a2. Describe types of radiation Sources; Radioactivity, Transformation Mechanisms, Transformation Kinetics	Describing types of radiation sources with solving problems	1 Oral questions 2.Presentations 3 .Quizzes 4. Problem solving
1.3	a.3 Define Interactions of ionizing radiation with Matter by studying the :- 1- Interactions of alpha and beta charged particles with Matter 2- Interactions of	**Select suitable Showing power point presentation for explanation the interaction of radiation with matter**	1 Oral questions 2. Presentations 3 .Quizzes 4. Problem solving

	gamma electro charged particles with Matter		
1.4	a4- Reproduce of X Rays: Accelerated Charged Particle, Linear Accelerator and X-ray machines.		
2.0	**Cognitive Skills**		
2.1	**b1. Creating practical experiments for measurements radiation doses using thermoluminscence dosimeters..**	• Lectures	• Exam must contain questions that can measure these skills.
2.2	**b2. Applying the mathematical calculation of the radiation doses using mathematical and computer software**	• Brain storming • -Discussion	• Quiz and exams • Discussions after the lecture
3.0	**Interpersonal Skills & Responsibility**		
3.1	**At the end of the course, the student will be able to:** C1. work effectively in a group to make a decision. -.	- Lab work -	Evaluate the efforts of each student in preparing the report. Evaluation of students presentations
3.2	C2. Analyse obtained data and how to manage it. -	Case Study - Active learning -	Evaluate the scientific values of reports. Evaluate the work in team
	C3. Make a certain decision fast especially during data acquisition.	Small group discussion	Evaluation of the role of each student in lab group assignment.
4.0	**Communication, Information Technology, Numerical**		
4.1	D1. Enhancing the ability of students to use computers and internet.	Homework (preparing a report on some topics related to the course depending on web sites).	Evaluation of presentations

4.2	D2. Know how to write a report	Seminars presentation	Evaluation of reports
4.3	D3. Perform effective communication with colleagues and faculty members	Field visits to hospitals	Practical exam
5.0	**Psychomotor**		
5.1	N. A	N. A	N. A

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, quizzes, unsolved problems, oral presentation, class discussion and case study and an essay (single and/or group project, and poster).	Weekly	10%
2	1st Class Test Exam	7th	10%
3	2nd Class Test Exam	13th	10%
4	Final Practical Exam & Lab. Reports.	15th	20%
5	Final Exam	16th-17th	50%

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)

Each student will supervise by an academic adviser in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks
1- Herman Cember and Thomas E. Johnson "introduction to Health Physics" 4th Ed. McGraw-Hill 200921.
2.Ervin B. Podgorsak "Radiation physics for medical physicists" Springer 2006.

2. List Essential References Materials (Journals, Reports, etc.)
ICRP web sities go to http:// ICRP.org/publications.asp

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

1. Stabin " Radiation Protection and dosimetry" , Springer 2007 2. Simon Cherry, Michael E. Phelps "Physics in Nuclear Medicine" 3rd add," Saunders 2003
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc. ICRP web sities go to http:// ICRP.org/publications.asp
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. • Staff web site

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.) **1. Accommodation (Lecture rooms, laboratories, etc.)** • Class room is already provided with data show The area of class room is suitable concerning the number of enrolled students (68) and air conditioned.
2. Computing resources (AV, data show, Smart Board, software, etc.) **2. Computing resources** • Providing class rooms with computers and labs with data show.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Questionaries (Course survey and Examination survey) • Open discussion in the class room at the end of the lectures
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department Course Survey Program Survey
3 Processes for Improvement of Teaching • Preparing the course as PPT. • Using scientific movies. • Periodical revision of course content.

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)

- After the agreement of Department and Faculty administrations

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

27- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

28- According to point 1 the plan of improvement should be given.

Name of Instructor: _____ Dr. Taha Alfawwal

_____

Signature: Date Report Completed: 23/4/1439

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Allugmani

Signature: Saleh Date Received: 23/4/1439

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Program: Medical Physics

Course title: Physics of Ultrasound in Medicine

Course code: 403390-2

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439**
College/Department: **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title: **Physics of Ultrasound in Medicine** Course Code**: 403391-2**
2. Credit hours: **2 (2+0+0) Hr**
3. Program(s) in which the course is offered: **Bachelor's of Science (B.Sc) Medical Physics**
(If general elective available in many programs indicate this rather than list programs)
4. Course Language: **English**
5. Name of faculty member responsible for the course
Dr. Hosam Salaheldin Ibrahim
6. Level/year at which this course is offered: **3th Year / Level 6**
7. Prerequisites for this course (if any): **Health Physics (403383-3)**
8. Co-requisites for this course (if any): **NIL**
9. Location, if not on the main campus: **Main campus (Abdeia) and Alzaher campus**
10. Mode of Instruction (mark all that apply)

A. Traditional classroom	√	What percentage?	80%
B. Blended (traditional and online)	√	What percentage?	20%
C. E-learning		What percentage?	
D. Correspondence		What percentage?	
F. Other		What percentage?	

Comments:……

B Objectives

1. What is the main purpose of this course?

The overall goal is to study the physical characteristics of ultrasound, generation methods and different medical applications as a safe medical imaging technique.

Upon completion of the course, the student should be able to:

1. *Identify the basic fundamentals of ultrasound (US) waves: Physics of wave motion, ultrasound intensity, and attenuation of ultrasound.*
2. *Perform basic mathematical calculations related to US physics.*
3. *List and describe the components of a US transducer.*
4. *Comprehend transducer construction and how US waves are generated, detected and received by the transducer.*
5. *Differentiate between different types of ultrasound imaging modes (i.e., A mode, B mode, M-mode and 2D Echocardiography).*
6. *Describe the various functions performed by the transducer and how to manipulate them for the best image quality.*
7. *Describe the types of Doppler evaluation and identify the similarities and differences.*

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)

- The E-Learning system is being conducted.
- The instructor suggests that the students should learn the basic structure of physics of human hearing and its mechanisms.
- Also, the measurement of acoustic of hearing should be conducted for the students.
- To carry out an assay, encourage the students to use different web search engines, writing software packages, statistical softwares....etc.
- Interpersonal skills, relating to the ability to interact with other people and to engage in team-working through group discussion.
- Problem solving skills, relating to qualitative and quantitative information.

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

Course Description:

1 Topics to be Covered

Topics	No of Weeks	Contact hours
Waves in Elastic Media **1.1 General Definitions** **1.2 kinds of mechanical waves** • **Longitudinal Wave** • **Transverse Wave** **1.3 Physical Description of Both Longitudinal and Transverse Waves** **1-Graphical representation of a longitudinal wave** **2. Graphical representation of a transverse wave** • **The transverse wave displacement equation of the at any time and position** • **Description of transverse traveling wave** **1.4 The propagation of sinusoidal wave through a string who has a mass per unit length (μ) and is under a tension (F)**	**2**	**4**
Ultrasound Waves **2.1 General Definitions** **2.2 Ultrasound (US) intensity** • **Relation between Ultrasound intensity and maximum pressure (P_m) in the medium** **Solved problems** **2.2 Acoustic Impedance** **2.3 Attenuation of Ultrasound (US) (Absorption, Reflection and Scattering)** **2.3.1- Specular Reflection & Transmission** • **The intensity reflection coefficient** • **The intensity transmission coefficient** **Solved problems** **2.3.2 – Scattering** **2.3.3 – Absorption** **2.4. Overall Attenuation definitions and equations** **2.5. Intensity at half value thickness definitions and equations** **2.6 The logarithmic attenuation coefficients on frequency for some tissues**	**4**	**8**
Generating and Detecting of Ultrasound **3.1 The Piezoelectric Effect:**	**3**	**6**

• Naturally occurring crystalline materials • Artificial materials • What is a crystal? **3.2 Generating of Ultrasound (US)** **3.3 Detecting of US** **3.4 Detecting or receiving of US** **3.5 Transducer Design** **3.6 Resonance Frequency** **3.7 Ultrasound (US) For medical applications**		
Us Presentation Modes **1-A-Mode** **2-B-Mode** **B-mode images may be displayed as either "static" or "real-time" images** **Real-time B-mode images are useful in** **3-The M-mode** **2D Echocardiography** **The time required to obtain images** **Pulse Repetition Period (PRP)** **Image Frame Rate and Spatial Sampling** **Transducer selection**	**4**	**8**
The Doppler Effect: **1- Measurement of the frequency shift.** **2- Measurement of reflection from media of different acoustic impedances.**	**2**	**4**
	15 weeks	**30 hr**

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**30**	**-**	**-**	**-**	**-**	**30**
Credit	**2**	**-**	**-**	**-**	**-**	**2**

3. Additional private study/learning hours expected of students per week.	**4**

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** ***At the end of this course the student should be able to:***		
1.1	Describe acoustic quantities and their relationships, namely: displacement, pressure, particle velocity, phase velocity, acoustic impedance, absorption, energy density and intensity	- Classroom lectures - Tutorials and independent study assignments - Individually hand written assignments required use of library reference material and web sites to identify the information required to complete tasks. - E-learning through the university website.	- Graded homework. - Assignments. - Quizzes. - Oral Group Discussion. - Class tests (e.g. 15 minute multiple choice test on content on completion of each topic) with a defined ratio of the final assessment of the course. Multiple choice knowledge item on final exam
1.2	Recognize the basic knowledge of ultrasound wave generation, detection, and receiving using transducer.		
1.3	List the basic modes of ultrasound imaging. Outline the basic information about Doppler effect and its applications.		
1.4	Recognize how to assess, improve and develop the quality of medical ultrasound images.		
2.0	**Cognitive Skills** ***At the end of this course the student should be able to:***		
2.1	Expalin the physics ultrasound (US) waves basics, concerning the concepts, principles, and theories.	- Explain and justify several unsolved examples and unsolved problems in lecture under the supervision of the instructor. - Encourage the students to	- Graded homework. - Class exams. - Final Exam. - Group and individual
2.2	Investigate the transducer, structure,		

	defects and problems in a field of study using a range of sources and draw valid conclusions.	analyze and enhance the medical images using experimental software systems for freehand three-dimensional ultrasound imaging such as *Stradwin and* .	assignments require application of analytical tools in problem solving tasks. - Class participation.
2.3	Distinguish between different types of ultrasound imaging modes.		
2.4	Recognize and predict the fundamentals and functions of Doppler effect.		
3.0	**Interpersonal Skills & Responsibility** ***At the end of this course the student should be able to:***		
3.1	Work effectively in groups as well as individuals and appraise the cooperation through teamwork to assess and criticize various emergent problems.	- Discuss with students. - Group presentation. -Group assignment (the instructor should meet with each group part way through project to discuss and advise on approach to the tasks). - Individual student assignment or report carries out using the internet and/or library as a source of search.	- Evaluation of group reports and individual contribution within the group. - Peer or self assessment. - Evaluation of the capacity for independent study which could be assessed in individual assignments.
3.2	Demonstrate a comprehensive knowledge of the principles of problem solving within the ultrasound profession in order to resolve issues in practice.		
3.3	Develop the capacity to critically reflect on personal and professional practice in order to identify potential areas of development.		
4.0	**Communication, Information Technology, Numerical** ***At the end of this course the student should be able to:***		
4.1	Communicate effectively with others through oral or written reports.	- Essay questions - Group presentation - Encouraging assays, reports and presentations. - Encourage the student to use the modern Information and Communication Technology (ICT) tools to prepare the required essays, reports, and/or projects. - Also, the students should conduct the ideal proper style and referencing format as specified in college style manual.	- Assessments of student's assignments. - Evaluation of group reports and individual contribution within the group. - Reports and presentations. - Instructor's feedback - Final and short exams include different problems which need numerical and technical skills.
4.2	Evaluate and disseminate written and verbal information, with due regard to the practice needs and relatives.		
4.3	Demonstrate ICT to appraise and critically evaluate research relevant to advanced ultrasound practice.		

5.0	Psychomotor		
5.1	Not applicable (N/A)	N/A	N/A

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 & Quizes, Problems, case study, and an Essay (Project)	To be assigned Weekly	20 %
2	1st Class test	7th	15%
3	2nd Class test	13th	15%
4	Final Exam	16th -17th	50%

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)

Each student will supervise by an academic adviser in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks

1. Jerrold T. Bushberg, J. Anthony Seibert, Edwin M. Leidholdt Jr, and John M. Boone, The Essential Physics of Medical Imaging, Lippincott Williams & Wilkins, A Wolters Kluwer, 3rd Ed (2012).

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

1. Medical Image Analysis journal, Elsevier Science Ltd.

https://www.journals.elsevier.com/medical-image-analysis/
http://obgyn.onlinelibrary.wiley.com/hub/journal/10.1002/(ISSN)1469-0705/

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

1. William R. Hendee, E. Russell Ritenour, Medical Imaging Physics, Wiley-Liss, Inc. 4th Ed (2002).
2. Paul Davidovits, Physics in Biology and Medicine, Elsevier Inc Ltd, 3rd Ed (2002).

4. List Electronic Materials, Web Sites, Facebook, Twitter, ……..etc.) 1- Free Software from the Medical Imaging Group http://mi.eng.cam.ac.uk/~rwp/Software.html 2- Ultrasound Imaging https://www.class-central.com/tag/ultrasound%20imaging
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. **1. The Microsoft Office for editing reports.** **2. The Matlab and Image J software package to train the student about how making image processing.**

F. Facilities Required

Indicate requirements for the course, including the 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.) There are enough classrooms provided with a good accommodation, including good air condition, good data show slide projector, and suitable white board.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each lecture classroom and laboratory, there is a data show, and a suitable white board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) **N/A**

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching 1. **Question to students on the course evaluation.** 2. **Question to students on the exam evaluation.**
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department 1. **Internal revisions by the staff members about the courses and examinations.** 2. **Questionnaires to job owners in the graduate employer evaluation.**
3 Processes for Improvement of Teaching 1. **Periodical revisions to the course specification, reports and evaluations of the instructor.** 2. **Continuous training courses on teaching improvements for staff member**

3. Using scientific flash and movies.

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)

- **Efficiency of course will be reflected in the results of the class, which reviewed by members of the teaching staff in addition to other duties such as discussing ideas and ways of teaching and learning.**
- **The course should be developed periodically to ensure that it contains the latest developments in the field of study.**
- **Development could be put as an objective in the report of the course to be achieved each semester**

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

Continuous observations of the following processes:

- **Statistical data feedback from questionnaires to students on the Instructor evaluation.**
- **Internal revisions by the staff members about the courses and examinations.**
- **Statistical data feedback from questionnaires to job owners in the graduate employer evaluation in order to improve the course according to the needs of the outer community.**
- **Statistical data feedback from questionnaires to the student needs in order to improve the course according to the needs of the students.**
- **Observation of the student results from examinations...**

Name of Instructor: _____Dr. Hosam Salaheldin Mohamed Ibrahim_____

Signature: Hosam Date Report Completed: 23/4/1439

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Allugmani

Signature: Saleh Date Received: 23/4/1439

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title: Radiation Protection

Course Coordinator: Dr. Ramadan. A. Hassan

Course code: 403388-2

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Radiation Protection (code: 403388-2)**
2. Credit hours: **2 (2+0+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Medical Physics.**
(If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course
Ramadan. A. Hassan
5. Level/year at which this course is offered: **Level 6/ 3rd Year**
6. Pre-requisites for this course (if any): **Physics of radiation effect (403384-2)**
7. Co-requisites for this course (if any): **NIL**
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	✓	What percentage?	80%
b. blended (traditional and online)	✓	What percentage?	10%
c. e-learning	✓	What percentage?	10%
d. correspondence		What percentage?	
f. Other		What percentage?	

Comments:
The mode of instruction is distributed and used three items [Traditional classroom with 80%, blended (traditional and online) 10%, and Traditional online with 10%].

B Objectives

1. What is the main purpose for this course? This course is designed to demonstrate and consolidate the basic radiation protection physics concepts as the information about Radiological quantities and units, acquire information about External Radiation Safety, study the Shielding against ionizing radiation , study the Internal Radiation Safety, and acquire radiation safety information about non-ionizing radiation
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) 1-list the information about Radiological quantities and units 2-Acquire information about External Radiation Safety 3- Study the Shielding against ionizing radiation 4- Study the Internal Radiation Safety 5-Acquire radiation safety information about non-ionizing radiation

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

Course Description: This course study of the foundations radiation protection concepts, dose limitation, lung models , shielding for gamma rays, X-ray , computer tomography and radiotherapy machines, beta and neutrons and ways to minimize radiation exposure to various internal and external systems to the limits of radiation. In addition this course study the ways of radiation safety from non ionizing radiation

1 Topics to be Covered

Topics	No of Weeks	Contact hours
❖ **Radiological quantities and units;** 1. Radioactivity quantities 2. Activity, specific activity, activity concentration, activity per area, Specific quantities for radon. 3. Radiation Safety Guides 4. Organizations that set standards 5. Philosophy of Radiation Safety 6. ICRP Basic Radiation Safety Criteria	**2**	**4**
❖ **External Radiation Safety** Basic Principles Shielding against ionizing radiation; Penetration depths of charged particles, Electrons and positrons, Photons Basic shielding concept Attenuation data of radioactive sources in	**3**	**6**

shielding materials, Gamma ray Photons Shielding X-ray Shielding NCRP 147Methodology		
❖ **Computed Axial Tomography Radiotherapy Machines** ❖ **1st Class Test Exam**	**2**	**4**
❖ **Particle Shielding** Beta Shielding Neutrons Basic shielding concepts, Attenuation data of various neutron sources in shielding materials optimization	**2**	**4**
❖ **Internal Radiation Safety** Principles of Control Surface contamination limit Optimization Internal Radiation Safety; Quantities for internal dosimetry, Limits, constraints, action levels Power.	**2**	**4**
❖ **Evaluation of Radiation Safety Measures** Estimated of Internal deposited radioactivity In-Vivo Bioassay Individual monitoring Surface contamination Particle sizing Methods for measuring radon gas Activated charcoal Alpha track detectors Electret ion chambers Grab samples **Exercises and Solved problems** **2nd Class Test Exam**	**4**	**8**
	15 weeks	**30 hrs**

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**30**	**-**	**-**	**-**	**-**	**30**
Credit	**2**	**-**	**-**	**-**	**-**	**2**

3. Additional private study/learning hours expected of students per week. **4**

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	Recognize facts, principle and concepts of elementary radiation protection Physics	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams 3. Lecturing method: Board, Power point 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams Discussions during the lectures.
1.2	Describe concepts, Procedures of radiation protection	1. Demonstrating the basic principle of the experiment. 2. Show the best ways to perform the experiments 3. Show the best ways to demonstrate the results. 4. Show the best way to write the reports about the experiment. 5. Discussion with the student about the results.	Home work. Writing scientific Reports. Doing team research or team project. Doing team work to perform some experiments Discussions during the class.
2.0	**Cognitive Skills**		
2.1	Apply the laws of radiation protection physics.	1. Preparing main outlines for teaching 2.Following some proofs 3.Define duties for each chapter 4.Encourage the student to look for the information in different references 5.Ask the student to attend lectures for practice solving problem	1.Midterm's exam. Exams, short quizzes 2.Asking about physical laws previously taught 3.Writing reports on selected parts of the course 4.Discussions of how to simplify or analyze some phenomena
2.2	Solve problems in radiation protection Physics by using suitable mathematical principles		
2.3	Analyse and interpret quantitative results		
2.4	Express the radiation protection physical phenomena mathematically.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-	• Search through the internet and	• Evaluate the efforts of

	learning to be aware with recent developments in physics	use the library. • Lab work. • Small group discussion. • Enhance educational skills. • Develop their interest in Science through :(lab work, field trips, visits to scientific and research. • Encourage the student to attend lectures regularly • Give students tasks of duties	each student in preparing the report. • Evaluate the scientific values of reports. • Evaluate the work in team • Evaluation of the role of each student in lab group assignment • Evaluation of students presentations
3.2	Work effectively in groups and exercise leadership when appropriate.		
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form	• Homework • preparing a report on some topics related to the course depending on web sites.	• Evaluation of presentations • Evaluation of reports • Practical exam • Homework. • Final exams.
4.2	Collect and classify the material for a course		
4.3	Use basic physics terminology in English		
4.4	Acquire the skills to use the internet communicates tools.		
5.0	**Psychomotor**		
5.1	N. A	N. A	N. A

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, quizzes, unsolved problems, oral presentation, class discussion and case study and an essay (single and/or group project, and poster).	Weekly	20%
2	1st Class Test Exam	7th	15%
3	2nd Class Test Exam	13th	15%
4	Final Exam	16th-17th	50%

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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (4hrs per week)

E Learning Resources

1. List Required Textbooks Herman Cember and Thomas E. Johnson "introduction to Health Physics" 4th edi. McGraw-Hill 2009 21. Simon Cherry, Michael E. Phelps "Physics in Nuclear Medicine" 3rd add," Saunders 2003
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) Stabin " Radiation Protection and dosimetry" , Springer 2007
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc. ICRP.com, NCRP.com
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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Class room require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Revision of student answer paper by another staff member. • Analysis the grades of students.

3 Processes for Improvement of Teaching

- Preparing the course as PPT.
- Using scientific flash and movies.
- Coupling the theoretical part with laboratory part
- Periodical revision of course content.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department.
- Feedback evaluation of teaching from independent organization.
- Independent evaluation by another instructor that give the same course in another faculty.
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

29- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

30- According to point 1 the plan of improvement should be given.

Name of Instructor: _____R. A. Hassan_____

Signature: Date Report Completed: 23/4/1439

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Allugmani

Signature: Saleh Date Received: 23/4/1439

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title: Computing in Medicine

Course Coordinator: Hosam I. Salaheldin

Course code: 403391-1

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439**
College/Department: **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title: **Computing in Medicine** Course Code**: 403391-1**
2. Credit hours: **1 (1+0+0) Hr**
3. Program(s) in which the course is offered: **Bachelor of Science (B.Sc) Medical Physics**
(If general elective available in many programs indicate this rather than list programs)
4. Course Language: **English**
5. Name of faculty member responsible for the course
Dr. Hosam Salaheldin Ibrahim
6. Level/year at which this course is offered: **Level 6 / 3th Year**
7. Prerequisites for this course (if any): **Laser in Medicine (403381-2)**
8. Co-requisites for this course (if any): **NIL**
9. Location, if not on the main campus: **Main campus (Abdeia) and Alzaher campus**
10. Mode of Instruction (mark all that apply)

A. Traditional classroom	√	What percentage?	80%
B. Blended (traditional and online)	√	What percentage?	20%
C. E-learning		What percentage?	
D. Correspondence		What percentage?	
F. Other		What percentage?	

Comments: The mode of instruction is distributed and used two items [Traditional classroom with 80%, and 20%blended (traditional and online)]

B Objectives

2. What is the main purpose of this course?

Computer software is used for diagnosis of diseases. It can be used for the examination of internal organs of the body. Advanced computer-based systems are used to examine delicate organs of the body. Some of the complex surgeries can be performed with the aid of computers. Medical imaging is a vast field that deals with the techniques to create images of the human body for medical purposes. Many of the modern methods of scanning and imaging are largely based on the computer technology.

After completing this course student should recognize the followings:

3. The use of Information & Communication Technologies (ICT) in medicine.
4. The improvement of the medical image quality using image processing software.
5. The modern application of computer in medical areas as a surgical tool.

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)

- The E-Learning system is being conducted.
- Students should learn a programming language (e.g. Matlab package, visual C++, ….etc).
- To carry out an assay, encourage the students to use different web search engines, writing software packages, statistical softwares....etc.
- Interpersonal skills, relating to the ability to interact with other people and to engage in team-working through group discussion.
- Problem solving skills, relating to qualitative and quantitative information.

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

Course Description:

1 Topics to be Covered

Topics	No of Weeks	Contact hours
Computer Digital and Analog Basics **Storage and transfer of data between computer number systems** **Decimal form (Base 10)** **Binary form** **Conversions between decimal and binary forms**	**1**	**1**

Digital Representation of Data Bits, Bytes, and Words **Digital Representation of Different Types of Data** **Storage of Positive Integers** **Binary Representation of Signed Integers** **Analog Data And Conversion Between Analog and Digital Forms** **Advantages and Disadvantages of the Analog and Digital Forms** **Solved problems** **Quiz 1** **Quiz 2**	**2**	**2**
Computer in Imaging, Nuclear Medicine **Pulse-Height Analyzer** **Digital Image Formats in Nuclear Medicine** **Nuclear medicine, computers is used for:** • **The Data Acquisition,** • **Data Storage.** • **Processing of Data.** **Formation of digital images.**	**2**	**2**
Display, Conversion of a Digital Image into an Analog Video Signal. **Grayscale Cathode Ray Tube Monitors.** **Image Acquisition in Nuclear Medicine.** **Frame Mode (Static, dynamic, gated).** **List-mode acquisition.** **The advantage of list-mode acquisition.** **The disadvantage of list-mode acquisition.** **Solved problems.** **Quiz 1** **1st Class Test Exam**	**2**	**2**
Information & Communication Technologies (ICT) and medicine • **Patient records** • **Medical equipments** • **Research** • **Web-based diagnosis** • **Expert systems** • **Communications** • **Computers and the disabled**	**2**	**2**
Digital Image Processing **Function of Image Processing** **General Areas of Image Processing** **Clipping** • **Point Operations** • **Look-Up Table (LUT)** **Contrast Point Operation** **Image Processing in Nuclear Medicine** **Brightness of Image** **Image Contrast** **Image Contrast Differences**	**2**	**2**

Histograms **Image Histogram** **Region or ROI (region of interest)** **Image Histogram Operations** • **Histogram Stretching** • **Histogram Sliding** • **Histogram equalization** • **Other Histogram Information** **Local Operations** **Convolution ((kernel)** • **Low Pass Filter** • **High Pass Filter** **2nd Class Test Exam**	**2**	**2**
Smoothing Filters **Linear Smoothing Filters** **Mean Or Average Filter** **Gaussian Smoothed Filter** **Non-linear Smoothing Filters** **Median Filter** **Enhance Filters** • **Edge enhancement** • **Edge detection** • **Directional Edge Detection** • **Laplacian Edge Detection** • **Sobel Edge Detection** • **Prewitt Edge Detection**	**2**	**2**
	15 weeks	**15 hr**

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**15**	-	-	-	-	**15**
Credit	**1**	-	-	-	-	**1**

3. Additional private study/learning hours expected of students per week.	**2**

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** ***At the end of this course the student should be able to:***		
1.1	Define the basic knowledge of computer related to the medical signal and/or image processing.	- Classroom lectures - Tutorials and independent study assignments - Individually hand written assignments required use of library reference material and web sites to identify the information required to complete tasks. - E-learning through the university website.	- Graded homework. - Assignments. - Quizzes. - Oral Group Discussion. - Class tests (e.g. 15 minute multiple choice test on content on completion of each topic) with a defined ratio of the final assessment of the course. Multiple choice knowledge item on final exam
1.2	Outline the basic information & communication technologies (ICT) related to medicine.		
1.3	State various image quality enhancement techniques.		
1.4	Recognize how to improve and develop the medical signal and /or image related to essential different medical imaging (e.g. nuclear medicine, MRI, ophthalmic and US image processing).		
2.0	**Cognitive Skills** ***At the end of this course the student should be able to:***		
2.1	Summarize general areas of image processing.	- Explain and justify several unsolved examples and unsolved problems in lecture under the supervision of the instructor. - Encourage the students to analyze and enhance the medical images using certain image processing program packages (e.g. MATLAB, Image J software).	- Graded homework. - Class exams. - Final Exam. - Group and individual assignments require application of analytical tools in problem solving tasks. - Class participation.
2.2	Compare between low pass filter and high pass filter.		
2.3	Differentiate between Clipping, Point Operations and Look-Up Table (LUT).		
2.4	Design different codes using a programming language to locate and enhance the medical signal and/or image.		
2.5	Differentiate between		

	different types of Histograms		
2.6	Explain linear smoothing filters and non-linear smoothing filters.		
2.7	Interpret the effect of edge detection different operators (e.g. Laplacian, Sobel and Prewitt) on the image details.		
3.0	**Interpersonal Skills & Responsibility** ***At the end of this course the student should be able to:***		
3.1	Work effectively in groups as well as individuals.	- Discuss with students. - Group presentation. - Group assignment (the instructor should meet with each group part way through project to discuss and advise on approach to the tasks). - Individual student assignment or report carries out using the internet and/or library as a source of search.	- Evaluation of group reports and individual contribution within the group. - Peer or self assessment. - Evaluation of the capacity for independent study which could be assessed in individual assignments.
3.2	Justify a short report in a written form and/or orally using appropriate scientific language.		
4.0	**Communication, Information Technology, Numerical** ***At the end of this course the student should be able to:***		
4.1	Illustrate information technology and modern computer tools to locate and retrieve scientific information relevant to computing in medicine.	- Essay questions - Group presentation - Encouraging assays, reports and presentations. - Encourage the student to use the modern Information and Communication Technology (ICT) tools to prepare the required essays, reports, and/or projects. - Also, the students should conduct the ideal proper style and referencing format as specified in college style manual.	- Assessments of student's assignments. - Evaluation of group reports and individual contribution within the group. - Reports and presentations. - Instructor's feedback - Final and short exams include different problems which need numerical and technical skills.
4.2	Appraise the cooperation through teamwork to assess and criticize various emergent problems.		
4.3	Interpret the defined noise and artifacts an in the medical images to be improved using different signal and/or image processing package.		
5.0	**Psychomotor**		

5.1	Not applicable (N/A)	N/A	N/A

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, quizzes, unsolved problems, oral presentation, class discussion and case study.	Weekly	10 %
2	1st Class test.	7th	15%
3	2nd Class test.	13th	15%
4	An essay (single and/or group project, and poster).	14th	10%
5	Final Exam.	16th-17th	50%

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)

Each student will supervise by an academic adviser in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks

1. Rachel A. Powsner, Edward R. Powsner, Essentials of Nuclear Medicine Physics and Instrumentation, A John Wiley & Sons, Ltd, 3rd Ed (2013).

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

1. Medical Image Analysis journal, Elsevier Science Ltd.
https://www.journals.elsevier.com/medical-image-analysis/

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

1. Paul Davidovits, Physics in Biology and Medicine, Elsevier Inc Ltd, 3rd Ed (2008).

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

- https://www.mathworks.com/products.html
- https://imagej.net/Downloads
- https://www.dartmouth.edu/~library/biomed/guides/research/medimages.html

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

1. The Microsoft Office for editing reports. **2. The Matlab and Image J software package to train the student about how making image processing.**

F. Facilities Required

Indicate requirements for the course, including the 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.) There are enough classrooms provided with a good accommodation, including good air condition, good data show slide projector, and suitable white board.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each lecture classroom and laboratory, there is a data show, and a suitable white board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) **N/A**

G Course Evaluation and Improvement Processes

2 Strategies for Obtaining Student Feedback on Effectiveness of Teaching **Question to students on the course evaluation.** **Question to students on the exam evaluation.**
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department **Internal revisions by the staff members about the courses and examinations.** **Questionnaires to job owners in the graduate employer evaluation.**
3 Processes for Improvement of Teaching **Periodical revisions to the course specification, reports and evaluations of the instructor.** **Continuous training courses on teaching improvements for staff member** **Using scientific flash and movies.**
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) • **Efficiency of course will be reflected in the results of the class, which reviewed by members of the teaching staff in addition to other duties such as discussing ideas and ways of teaching and learning.** • **The course should be developed periodically to ensure that it contains the latest developments in the field of study.** • **Development could be put as an objective in the report of the course to be achieved each semester**

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

Continuous observations of the following processes:

- **Statistical data feedback from questionnaires to students on the Instructor evaluation.**
- **Internal revisions by the staff members about the courses and examinations.**
- **Statistical data feedback from questionnaires to job owners in the graduate employer evaluation in order to improve the course according to the needs of the outer community.**
- **Statistical data feedback from questionnaires to the student needs in order to improve the course according to the needs of the students.**
- **Observation of the student results from examinations...**

Name of Instructor: _____Dr. Hosam Salaheldin Mohamed Ibrahim_____

Signature: Hosam Date Report Completed: **17/4/1439**

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Allugmani

Signature: Saleh Date Received: **24/4/1439**

المجتمع المسلم • تعريف الطالب بدعوة الشيخ "محمد بن عبد الوهاب" الإصلاحية • تزويد الطالب بسبل الإصلاح والنهوض بالأمة.
٢–صف بإيجاز أية خطط يتم تنفيذها لتطوير وتحسين المقرر الدراسي . أ– عمل استبيانات واخذ آراء الطلاب حول مفردات المادة والإفادة منها في تطوير المقرر ب –استشارة الزملاء المختصين. ج–الاستفادة من شبكة الانترنيت والمكتبة الجامعية لإعداد الأبحاث والتكاليف

ج) توصيف المقرر الدراسي

١–الموضوعات التي ينبغي تناولها:		
قائمة الموضوعات	عدد الأسابيع	ساعات التدريس
التعريف بالمقرر وأهدافه. الفصل الأول، المبحث الأول والثاني (ص ٧– ٢٠)	١	٢
الفصل الأول، المبحث الثالث والرابع (ص ٢١– ٥٣)		
الفصل الثاني، المبحث الأول (ص ٥٥– ٧٠)		
الفصل الثاني، المبحث الثاني (ص ٧١– ٨٨)	١	
الفصل الثالث، المبحث الأول والثاني (ص ٩٠– ١٠٦)		
الفصل الثالث، المبحث الثالث إلى السادس (ص ١٠٧– ١٢٠)		٢
الفصل الثالث، المبحث السابع والثامن (ص ١٢١– ١٣٥)	١	
الفصل الأول، المبحث الأول (ص ١٣٧ – ١٤٧)		
الفصل الأول، المبحث الثاني (ص١٤٨–١٦٤)		
الفصل الثاني، إلى المبحث الثاني (ص١٦٦–١٧٢)	١	
الفصل الثاني، المبحث الثالث إلى الخامس		

الفصل الثالث، المبحث الأول والثاني (ص١٩٤-٢٣٠)	٢	٤
(ص٢٣١-٢٤٨)	١	٢

المحاضرة: ٣٢	مادة الدرس: ٢٨	اختبارات: ٤

الفصل الثالث، المبحث الثالث

– يكلف الطالب بقراءة كتاب له صلة بالمقرر وتلخيصه .

٣- ساعات دراسة خاصة إضافية/ساعات التعلم المتوقع أن يستوفيها الطالب فصليا

– عرض الأسئلة ونتائج التجربة على المدرس على البريد الالكتروني .

:

٤- التوصيف للمعارف المراد اكتسابها: أن يكون الطالب قادرا على أن:

- يعرف المجتمع الإسلامي والمجتمعات المغايرة
- .يلم بالصورة المثلى للأمة في عصر صدر الإسلام.
- يعرف المجتمع المثالي للأمّة المسلمة..
- يلم بالانحراف في المنهج. والمفاهيم .
- يطلع على أحوال المجتمع المسلم المعاصر و الغزو الفكري و التيارات الفكرية المنحرفة وأثرها على المجتمع المسلم
- يعرف دعوة الشيخ "محمد بن عبد الوهاب" الإصلاحية
- يعرف سبل الإصلاح والنهوض بالأمة.

٢-استراتيجيات التدريس المستخدمة لتنمية تلك المعارف:

- المحاضرات والمناقشات خلالها.
- ربط الطالب بالمراجع الأساسية والمساندة في معرفة مفردات المقرر .
- زيارة المواقع الإلكترونية والاستفادة منها.

٣-طرق تقويم المعارف المكتسبة

ا- الأسئلة الشفوية المباشرة خلال المحاضرة.

ب- الاختبارات التحريرية.

ب. المهارات الإدراكية:
١–المهارات الإدراكية المراد تطويرها: أن يكون الطالب قادرا على أن: • يقارن بين المجتمع الإسلامي والمجتمعات المغايرة • .يحلل الصورة المثلى للأمة في عصر صدر الإسلام. • يعدد صفات المجتمع المثالي للأمّة المسلمة.. • يقوم الانحراف في المنهج. والمفاهيم . • يحلل أحوال المجتمع المسلم المعاصر و الغزو الفكري و التيارات الفكرية المنحرفة وأثرها على المجتمع المسلم • يوضح دعوة الشيخ "محمد بن عبد الوهاب" الإصلاحية • يعدد سبل الإصلاح والنهوض بالأمة.
٢–استراتيجيات التدريس المستخدمة لتنمية تلك المهارات: أ- توزيع بعض مفردات المقرر على الطلاب لتحليلها. ب– طرح قضايا واقعية معاصرة لها صلة بالمقرر ومناقشة الطلاب فيها.
٣–طرق تقويم المهارات الإدراكية لدى الطلاب: أ– الملاحظة المباشرة، ب– تقييم قدرة الطلاب على التحليل. ج– تقييم آراء الطلاب أثناء مناقشة القضايا إبان الدرس.
ج. مهارات التعامل مع الآخرين و تحمل المسؤولية:
–وصف لمهارات العلاقات الشخصية والقدرة على تحمل المسؤولية المطلوب تطويرها: – المبادرة في التواصل مع الزملاء . – الرغبة في الإسهام في تنمية التواصل الاجتماعي. – القدرة على التواصل الاجتماعي عبر شبكة المعلومات الفيس بوك. تقبل النقد العلمي من الزملاء وكسر الجمود الفكري عن طريق الحوار.
٢–استراتيجيات التعليم المستخدمة في تطوير هذه المهارات: أ– المحاضرات الأسبوعية. ب– البحث المكتبي الجماعي.
١- طرق تقويم مهارات التعامل مع الآخرين والقدرة على تحمل المسؤولية لدى الطلاب: – الاستطلاع المباشر لأراء الطلاب وتطلعاتهم.

– الملاحظة المباشرة لسلوك الطلاب وتوجهاتهم.			
هـ. المهارات الحركية النفسية : لا توجد –جدول مهام تقويم الطلاب خلال الفصل الدراسي:			
	اختبار نصفي		٪٢٠
	الملاحظة المباشرة لقياس المهارات على طريقة التقويم المستمر	جميع الأسابيع	٪٢٠
		السادس عشر	٪٦٠

د. الدعم الطلابي:

١–تدابير تقديم أعضاء هيئة التدريس للاستشارات والإرشاد الأكاديمي للطالب – الإرشاد والتوجيه الأكاديمي للطلاب – المحاضرة الأسبوعية يومي السبت والاثنين ٠ – الساعات المكتبية للإجابة على الاستفسارات٠

هـ . مصادر التعلم:

١–الكتب المقررة المطلوبة: كتاب الثقافة الاسلامية (٤٠١)
٢–المراجع الرئيسة: ١. كتاب الثقافة الاسلامية (٤٠١)
٣–الكتب و المراجع التي يوصى بها ١ – الثقافة الإسلامية (ثقافة المسلم وتحديات العصر) د. راشد شهوان وآخرون ٢ – نحو ثقافة إسلامية أصيلة ، د. عمر الأشقر. ٣ – نظرات في الثقافة الإسلامية : محفوظ عزام ٤ – أساسيات العلوم المعاصرة في التراث الإسلامي : أحمد فؤاد باشا
٤–المراجع الإلكترونية، مواقع الإنترنت...الخ: http://www.ahlalhdeeth.com/vb/index.php http://www.tafsir.net/vb/ http://213.150.161.217/kfcris/login.htm
٥–مواد تعليمية أخرى مثل البرامج المعتمدة على الحاسب الآلي/الأسطوانات المدمجة، والمعايير /اللوائح التنظيمية الفنية: التراث الإسلامي، أو المكتبة الشاملة.

و . المرافق اللازمة:

١–المباني (قاعات المحاضرات، المختبرات،...الخ):
قاعة دراسية وعدد من الكراسي والطاولات يكفي لجميع الطلاب في المادة، مكتبة الكلية.
٢–مصادر الحاسب الآلي: أجهزة حاسب آلي مرتبطة بالنت . مكتبة الكترونية،
٣–مصادر أخرى (حددها...مثل: الحاجة إلى تجهيزات مخبرية خاصة، أذكرها، أو أرفق قائمة بها):
وجود مكتبة صغيرة وفق متطلبات المقرر.

ز. تقييم المقرر الدراسي وعمليات تطويره

١–استراتيجيات الحصول على التغذية الراجعة من الطلاب بخصوص فعالية التدريس:
أ- سؤال الطلاب مباشرة نهاية كل محاضرة.
ب – مقاييس الاختبارات وتقييم النتائج.
ج — التقييم الفصلي عن طريق بيانات معتمدة توزع على الطلاب.
٢–استراتيجيات أخرى لتقييم عملية التدريس من قبل المدرس أو القسم :
أ- التقييم عن طريق المجموعات والأقسام المتناظرة.
ب– وحدة القياس والتقييم في الجامعة.
ج- عرض الدرس على بعض الزملاء.
٣–عمليات تطوير التدريس :
–عن طريق الدورات التابعة لوكالة التطوير الجامعي.
–عن طريق الدوريات الصادرة عن المؤسسات التعليمة والتربوية.
–عن طريق تبادل الخبرات التعليمة والفنية بين الأساتذة.
٤– عمليات التحقق من معايير الإنجاز لدى الطالب
أ- لجنة من القسم بمراجعة إجابات الطلاب وتقدير الدرجات المتحصل عليها.
ب- تقييم الامتحان والأسئلة المعدة للقياس والتقويم.
ت- تحليل الاختبارات ومقارنة النتائج .
٥–صف إجراءات التخطيط للمراجعة الدورية لمدى فعالية المقرر الدراسي والتخطيط لتطويرها:
أ. تنقيح ومراجعة المقرر كل فصل دراسي.
ب. العمل على تطوير مفردات المقرر.
ت. الاستفادة من خبرات الأستاذة في المجموعات المتناظرة.
ث. الاستفادة من كل جديد لدى الدوريات والمجلات عن طرائق تدريس

سبحانك اللهم وبحمدك وآخر دعواهم أن الحمد لله رب العالمين والله ولي التوفيق

Level 7

403495-4 Physics of Nuclear Medicine

403492-4 Medical Radiation Physics II

403493-3 Physics of Radiation Therapy II

403496-3 Physics of Biomaterial

403370-3 Solid State Physics I

102101-2 The Bibography of Prophet Muhammed (PBUH)

605401-2 The Holy Quraan IV

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title: Physics of Nuclear Medicine

Course Coordinator: Dr. Ramadan. A. Hassan

Course code: 403495-4

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Physics of Nuclear Medicine (code: 403495-4)**
2. Credit hours: **4 (3+1+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Medical Physics.**
(If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course
Ramadan. A. Hassan
5. Level/year at which this course is offered: **Level 7/4th year**
6. Pre-requisites for this course (if any): **Physics of Medical Imaging / Code: 403389-3**
7. Co-requisites for this course (if any): **NIL**
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	✓	What percentage?	80%
b. blended (traditional and online)	✓	What percentage?	10%
c. e-learning	✓	What percentage?	10%
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:
The mode of instruction is distributed and used three items [Traditional classroom with 80%, blended (traditional and online) 10%, and Traditional online with 10%].

B Objectives

1. What is the main purpose for this course?

This course is designed to demonstrate and consolidate the physical principles of radioisotopes used in medicine and biology and operation of related equipment, lecture include;
1 Basic Nuclear Medicine Physics,
2 Formation of Radionuclides,
3 Nonscintillation Detectors,
4 Nonimaging Scintillation Detectors,
5 Imaging Instrumentation,
6 Radioisotopes medical applications
7 Nuclear medicine imaging
9 Quality Control
10 Radiation protection in nuclear medicine

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)

1-Cooperate with Nuclear medicine centers to find how they deal with the practical subjects.

2- Posting some course material on the websites to help the students.

3-Frequently check the latest discovery in science to improve the course objectives.

4- Cooperate with other educational institutions to find how they deal with the subject.

5- Re- new the course references frequently.

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

Course Description:

The course will cover the principle of radioisotopes used in medicine and operation of related equipment, such as formation of radionuclides, non-scintillation detectors, nonimaging scintillation detectors, imaging instrumentation, radioisotopes medical applications, nuclear medicine imaging and quality control. This course will provide a conceptual and experimental background in nuclear medicine physics sufficient to enable students to take courses that are more advanced in related fields.

1 Topics to be Covered		
Topics	**No of Weeks**	**Contact hours**
❖ **Basic of Nuclear Medicine Physics,** 1. Isotopes, Isotones, and Isobars 2. Radioactive transformations 3. Radioactivity 4. Half & average life Solved problems, Quizzes and homework exercises	**1**	**3**
❖ **Formation of Radionuclides,** 5. Production & properties of Radio-Isotopes 6. Methods of Production 7. Radioisotopes Generators 8. Transient & Secular equilibrium 9. Cyclotron 10. Nuclear reactors Solved problems, Quizzes and homework exercises	**2**	**6**
❖ **Nonscintillation Detectors,** 1- Gas-Filled Detectors (Theory, Principles) 1. Characteristics of the Major Voltage Regions 2. Types of Gas-Filled Detectors (Ionization Chambers, Proportional Counters, Geiger Counters) 2- Semiconductor Detectors 3- Photographic Detectors Solved problems, Quizzes and homework exercises	**2**	**6**
❖ **Nonimaging Scintillation Detectors,** 1- Structure and Characteristics of the Crystal Scintillation Detector 2- Sodium Iodide Detector Energy Spectrum 3- Other Peaks in the Energy Spectrum of the Source 4- Types of Crystal Scintillation Detectors Solved problems, Quizzes and homework exercises	**2**	**6**
❖ **Imaging Instrumentation,** 1- Radiation Scanners & Gamma camera 2- Positron emission tomography Solved problems, Quizzes and homework exercises **1st Class Test Exam**	**2**	**6**
❖ **Radioisotopes medical applications** 1- Uses of Radioisotopes in The Study of Metabolic pathway 2- Radioimmunoassay (RIA) 3- Radiotherapy Solved problems, Quizzes and homework exercises	**2**	**6**

❖ **Quality Control** 1- Nonimaging Devices (Dose Calibrator, Survey Meters,Crystal Scintillation Counters) 2- Imaging Devices (Planar Gamma Camera) Solved problems, Quizzes and homework exercises	**2**	**6**
❖ **Radiation protection in nuclear medicine** 1- Limiting of External & Internal Exposure Solved problems, Quizzes and homework exercises • **Revision and Solved problems** • **2nd Class Test Exam**	**2**	**3**
	15 weeks	**45 hrs**

Practical part:

1- Radioactive decay calculation (rad pro simulation)
2- Radioactive decay calculations
3- Abilities of α, β and γ rays to pass through the air;(rad lab sim.)
4- Determining the Effect of thickness of Absorber;(rad lab sim.)
5- Determining the Effect of types of Absorber;(rad lab sim.)
6- Effect of types of voltage on GM;(rad lab sim.)
7- Geiger Counter ;(rad lab sim.)
8- Rad lab gamma spectroscopy software
9- Dose Calibrator quality control (QC)
10- Survey Meters quality control (QC)

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	**-**	**42**	**-**	**-**	**87**
Credit	**3**	**-**	**1**	**-**	**-**	**4**

3. Additional private study/learning hours expected of students per week. **6**

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	Recognize facts, principle and concepts of Nuclear Medicine Physics.	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams 3. Lecturing method: Board, Power point 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams Discussions during the lectures.
1.2	Describe concepts, Procedures of some experiments in Nuclear Medicine Physics.	1. Demonstrating the basic principle of the experiment. 2. Show the best ways to perform the experiments 3. Show the best ways to demonstrate the results. 4. Show the best way to write the reports about the experiment. 5. Discussion with the student about the results.	Home work. Writing scientific Reports. Doing team research or team project. Doing team work to perform some experiments Discussions during the class.
2.0	**Cognitive Skills**		
2.1	Apply the laws of Nuclear Medicine Physics.	1. Preparing main outlines for teaching 2.Following some proofs 3.Define duties for each chapter 4.Encourage the student to look for the information in different references 5.Ask the student to attend lectures for practice solving problem	1.Midterm's exam. Exams, short quizzes 2.Asking about physical laws previously taught 3.Writing reports on selected parts of the course 4.Discussions of how to simplify or analyze some phenomena
2.2	Solve problems by using suitable mathematical principles		
2.3	Analyse and interpret quantitative results		
2.4	Express the phenomena mathematically.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-	• Search through the internet and use	• Evaluate the efforts of

	learning to be aware with recent developments in physics	the library. • Lab work. • Small group discussion. • Enhance educational skills. • Develop their interest in Science through :(lab work, field trips, visits to scientific and research. • Encourage the student to attend lectures regularly • Give students tasks of duties	each student in preparing the report. • Evaluate the scientific values of reports. • Evaluate the work in team • Evaluation of the role of each student in lab group assignment • Evaluation of student's presentations
3.2	Work effectively in groups and exercise leadership when appropriate.		
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form	• Homework • preparing a report on some topics related to the course depending on web sites.	• Evaluation of presentations • Evaluation of reports • Practical exam • Homework. • Final exams.
4.2	Collect and classify the material for a course		
4.3	Use basic physics terminology in English		
4.4	Acquire the skills to use the internet communicates tools.		
5.0	**Psychomotor**		
5.1	N. A	N. A	N. A

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, quizzes, unsolved problems, oral presentation, class discussion and case study and an essay (single and/or group project, and poster).	Weekly	10%
2	1st Class Test Exam	7th	10%
3	2nd Class Test Exam	13th	10%
4	Final Practical Exam & Lab. Reports.	15th	20%
5	Final Exam	16th-17th	50%

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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks Rachel A. Powsner, Edward R. Powsner "Essential Nuclear Medicine Physics" Blackwell Publishing Ltd 2006
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) 1. Simon Cherry, Michael E. Phelps "Physics in Nuclear Medicine" 3rd add," Saunders 2003 2. Peter F. Sharp, Howard G. Gemmell and Alison D. Murray "Practical Nuclear Medicine 3rd add." Springer–Verlag London Limited 2005
3. List Electronic Materials, Web Sites, Facebook, Twitter, etc. 1. Journal of nuclear medicine technology; http://tech.snmjournals.org/ 2. Journal of nuclear medicine; http://jnm.snmjournals.org/ 3. Journal of medical physics; http://www.jmp.org.in/md.asp
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
-http :// www.springer.com - http:// www.sciencedirect.com
-http:// www.gigabedia .org

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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board. There are enough laboratories for experimental physics, provided with air conditions, good data show, and experimental equipment.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Revision of student answer paper by another staff member. • Analysis the grades of students.
3 Processes for Improvement of Teaching • Preparing the course as PPT. • Using scientific flash and movies. • Coupling the theoretical part with laboratory part • Periodical revision of course content.
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) • The instructors of the course are checking together and put a unique process of evaluation. • Check marking of a sample of papers by others in the department. • Feedback evaluation of teaching from independent organization. • Independent evaluation by another instructor that give the same course in another faculty. • Evaluation by the accreditation committee in the university.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. 31- The following points may help to get the course effectiveness • Student evaluation • Course report • Program report • Program Self study 32- According to point 1 the plan of improvement should be given.

Name of Instructor: _____R. A. Hassan_____

Signature: Date Report Completed: 23/4/1439

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Allugmani

Signature: Saleh Date Received: 23/4/1439

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

Course Specifications (CS)

Program: Medical Physics

Course title: Medical Radiation Physics 2

Course Coordinator: Dr. Taha Alfawwal

Course code: 403492-4

This form Compatible with NCAAA 2013 Edition

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Medical Radiation Physics 2 (Code: 403492-4)**			
2. Credit hours: **4 (3+1+0) Hrs**			
3. Program(s) in which the course is offered. **B.Sc Medical Physics.** (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course **Dr. Taha Alfawwal**			
5. Level/year at which this course is offered: **4th Year/Level 7**			
6. Pre-requisites for this course (if any): **Medical Radiation Physics 1 (4032280-4)**			
7. Co-requisites for this course (if any): **NIL**			
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	✓	What percentage?	80%
b. blended (traditional and online)	✓	What percentage?	20%
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments: The mode of instruction is distributed and used two items [Traditional classroom with 80%, and 20% blended (traditional and online)].			

B Objectives

1. What is the main purpose for this course?
At the end of this course the students will be able to:
1- **Acquire** basics of exposures by cosmic radiation and cosmogenic radionuclides, origin and Kinds of cosmic radiation, exposures by cosmic radiations and, terrestrial radiations.
2-Acquire the basic of the radiation protection quantities and units, and operational quantities.
3-**Calculate** the entrance skin dose for patients undergoing diagnostic X-ray.
4-Describe types of phantoms of the human body.
5- Acquire information about occupational exposures and Environmental source geometries
6- **Acquire** different methods for external dosimetry.
7- **List** the différents route of radionucléides intime.
8-Calculate the internal dose using Médical Interna Radiation Dose, MIRD method.
9- Acquire procedure of direct measurement of internal dosimetry.
10- D**escribe** the methods for decontamination.

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)
Increased use of web based reference material, and may changes in content as a result of new research in the field.

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

Course Description:
This course is interested in studying how the internal and external radiation doses and different ways to measure the radiation doses and the study of the nature of the radioactive contamination and how to make decontamination factor.

1 Topics to be Covered

Topics	No of Weeks	Contact hours
Part A Exposures from natural and man-made radiation sources Exposures by cosmic radiation and cosmogenic radionuclides Origin and kinds of cosmic radiation Exposures by cosmic radiations Terrestrial radiation External exposures Internal exposures	3 weeks	9 hrs
Part B: External dosimetry. Introduction • Protection and operational quantities **Protection quantities**		

The basic Dosimetric Quantities • *Absorbed dose* • *Protection Quantities* • *Mean Absorbed Dose* • *Equivalent Dose* • *effective dose* • ***Operational Quantities*** • *Ambient Dose Equivalent* • *Directional Dose Equivalent* • *Personal Dose Equivalents* • *Relationship between Qauntities for Radiological Protection and Monitoring Purpose* Dosimetric models **Models and phantoms of the human body** characteristics of phantom diagnostic phantoms, PMMA Phantom, Personal calibration phantoms, slab, chest and finger phantom Idealized geometries representing occupational exposures Environmental source geometries Methods of calculating protection quantities in computational models 1st Class Test	4 weeks	12 hrs
Part C Patients dosimetry Incidence Air Kerma Entrance Surface Air Kerma X-ray tube output Dose length product Computer tomogram Kerma Index100,a, 100, C_W Direct and indirect dose assessment	3 weeks	9 hrs
Part D- Medical Internal Radiation Dose Absorption through intact skin , Systemic behaviour of radionuclides, Excretion, Calculation of Radiation Dose (MIRD METHOD) Cumulative activity Equilibrium absorbed dose constant Absorbed Fraction Mean Dose per Cumulative Activity Mean Dose per Cumulative Activity Whole Body Dose and Effective Dose W hole Body Dose and Effective Dose Patient dosimetry in diagnostic X-ray	4 weeks	12hrs
-Part **E** Methods of individual monitoring Decontamination 2nd Class Test	1 week	3 hrs
	15 weeks	**45 hrs**

Practical part:

- The Human arm model--1
- The Human arm model--2
- Fluids Motion (Simulation)
- Doppler effect (Simulation)
- Action potential (Simulation)
- Eye vision
- X-ray
- Radioactive Dating (Simulation)

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	**-**	**42**	**-**	**-**	**87**
Credit	**3**	-	**1**	**-**	**-**	**4**
3. Additional private study/learning hours expected of students per week.			**6**			

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	a1. Outline about fundamentals of Naturally Occurring Radioactivity and Types of exposure	Start each chapter by general idea of the meaning of exposure Demonstrate the course information and principles through lectures. Describing radiation protection concepts with solving problems Describing the procedure of Calculation the internal dose using Médical Interna Radiation Dose, MIRD method.	6. Home work 7. Interactive discussion 8. Short exam1 9. Short exam2 10. Final exam
1.2	*a2. Describe calibration of thermoluminscence dosimeters*		1 Oral questions 2.Presentations 3 .Quizzes 4. Problem solving
1.3	a3.State operational radiation quantities		1 Oral questions 2. Presentations 3 .Quizzes 4. Problem solving
1.4	a4. Memorize protection radiation quantities.		
1.5	a5. Describe students different methods of medical internal dosimetry		
1.6	a6. State fundamentals of Decontamination concept and reduction factor		
1.7	a7. Memorize the importance of Skin equivalent dose calculation.		
2.0	**Cognitive Skills**		
2.1	b1. Evaluating the internal effective dosses for organs in nuclear medicine and related fields of studies.	• Lectures. • Brain storming. • Discussion.	• *Exam must contain questions that can measure these skills.* • *Exam must contain questions that can measure these skills.* - *Quiz and exams* - Discussions after the lecture
2.2	b2.Applying the mathematical expressions in calculating the external and internal doses due to external and internal exposure.		
2.3	b3. Integrate information technology (IT) based solution into radiation.		

3.0	**Interpersonal Skills & Responsibility**		
3.1	C1. work effectively in a group to make a decision.		-.
3.2	C2. Analyse obtained data and how to manage it. -	- Lab work -	Evaluate the efforts of each student in preparing the report. Evaluation of student presentations
3.2	C3. Make a certain decision fast, especially during data acquisition.	- Case Study - Active learning	Evaluate the scientific values of reports. Evaluate the work in team.
4.0	**Communication, Information Technology, Numerical**		
4.1	Enhancing the ability of students to use computers and internet.	*Homework (preparing a report on some topics related to the course depending on web sites).*	*Evaluation of presentations*
4.2	Know how to write a report Perform effective communication with colleagues and faculty members	*Seminars presentation*	*Evaluation of reports*
4.3	Enhancing the ability of students to use programs designed for medical internal radiation dose software and enhancing their ability to interpret the results. Know how to write a report	Field visits to hospitals	Practical exam
5.0	**Psychomotor**		
5.1	N. A	N. A	N. A

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, quizzes, unsolved problems, oral presentation, class discussion and case study and an	Weekly	10%

	essay (single and/or group project, and poster).		
2	1st Class Test Exam	7th	10%
3	2nd Class Test Exam	13th	10%
4	Final Practical Exam & Lab. Reports.	15th	20%
5	Final Exam	16th-17th	50%

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)

Each student will supervise by an academic adviser in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks

1- Herman Cember and Thomas E. Johnson "introduction to Health Physics" 4th Ed. McGraw-Hill 200921.

2.Ervin B. Podgorsak "Radiation physics for medical physicists" Springer 2006.

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

ICRP web sities go to http:// ICRP.org/publications.asp

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

1. A.Kaul " Radiological Protection" London Bostein , Group VIII , V 4, 2005
2. IAEA: Radiological Physics: 2014.
3. Stabin " Radiation Protection and dosimetry" , Springer 2007

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

ICRP web sities go to http:// ICRP.org/publications.asp

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

- Staff web site

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.)

1. Accommodation (Lecture rooms, laboratories, etc.)

- The class room is already provided with data show
- The area of the classroom is suitable concerning the number of enrolled students (68) and air

conditioned.
2. Computing resources (AV, data show, Smart Board, software, etc.) **2. Computing resources** • Providing the classroom with computers and labs with data show.
3. Other resoures (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Questionaries (Course survey and Examination survey) • Open discussion in the classroom at the end of the lectures
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Course Survey • Program Survey
3 Processes for Improvement of Teaching • Preparing the course as PPT. • Using scientific movies. • Periodical revision, of course content.
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) • After the agreement of Department and Faculty administrations
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. The following points may help to get the course effectiveness • Student evaluation • Course report • Program report • Program Self study 33- According to point 1 the plan of improvement should be given.

Name of Instructor: _____ Dr. Taha Alfawwal

_____

Signature: Date Report Completed: 23/4/1439

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Alluqmani

Signature: Saleh Date Received: 23/4/1439

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course Title: Physics of Radiation Therapy (2)

Course Code: 403386-4

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439 H**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Physics Radiation Therapy (2) (Code: 403439)**
2. Credit hours: **3 (2+1+0) Hrs**
3. Program(s) in which the course is offered. **B.Sc Medical Physics**
(If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course
Prof. Dr. Samir S. Natto
5. Level/year at which this course is offered: **4rd Year / 7th Level**
6. Pre-requisites for this course (if any): **Physics of Radiation Therapy 1 (403386-4)**
7. Co-requisites for this course (if any): **NIL**
8. Location if not on main campus: **Main male campus (Abdeia) and Alzaher female campus.**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	✓	What percentage?	70%
b. blended (traditional and online)	✓	What percentage?	15%
c. e-learning	✓	What percentage?	15%
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course?

On completion of this course, students should be able to:

- Master the most common treatment techniques used in external radiation therapy
- Describe the basic principles for the construction of a radiation treatment room from radiation protection point of view.
- Summarize the most common treatment techniques used in external and internal radiotherapy;
- Characterize the different imaging modalities used in radiotherapy treatment planning
- Discuss a range of clinical applications.

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)

To improve the student's expert in the field of Physics of Radiation Therapy
1- Cooperate with Hospitals to increase student's expert in field
2. Increase the students' open discusstion with radiation experts in the department.
3. Encourge students to register to webinars and worshops related to the radiotherapy physics offered hospitals and medical organisations in KSA, in addition to that offered online by IAEA.
4- Encourage the student to write frequently report about different topics in field using references in the liberary and the SDL
5- Frequently updating of the course topics

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

Course Description:
This course provides knowledge on advanced radiation therapy modalities to improve the quality of radiotherapy.The course covers methods of internal and external radiotherapy, intensity modulation, as well as 3D-conformal radiotherap. Different calculation algorithms for treatment planning, the impact of inhomogeneities, simulation and control systems as well as radiation biological aspects of radiation therapy with models for fractional treatment are studied. additionally, the imaging modalities used in radiotherapy.

1 Topics to be Covered		
Topics	**No of Weeks**	**Contact hours**
❖ **Computed Tomograpgy Image Acquisition** • Volumetric Imaging • 3D CT acquisition modes • CT Artifacts • Limitations of 3D Imaging of Moving Anatomy • 4D CT Scanning • Volumetric Imaging in the Treatment Room	**1**	**3**
❖ **Magnetic Resonance Imaging in Treatment Planning** • Principles of Magnetic Resonance Imaging • Rationale for the use of Magnetic Resonance Imaging in treatment planning • Problems with the use of Magnetic Resonance Imaging in treatment planning. • Methods to allow the use of Magnetic Resonance Imaging in treatment planning. • Clinical sites of Magnetic Resonance Imaging application in treatment planning.	**2**	**6**
❖ **3D-Conformal Radiotherapy** • Generalities and patient identification • Anatomic data acquisition and beam definition • Dose calculation and optimization • Verification and treatment realization • Volume and dose determination	**2**	**6**
❖ **Intensity-Modulated Radiation Therapy (IMRT)** • Principles and methods • Importance of radiation intensity modulation in radiotherapy • Treatment planning • Mathematic modelling of IMRT • Optimization algorithm	**2**	**6**
❖ **Stereotactic Radiosurgery (SRS)** • Stereotactic Radiosurgery techniques • Dosimetry • Dose Calculation Algorithms • Quality Assurance. • Clinical Application	**1**	**3**

❖ **Proton Beam in Radiotherapy** • Physics of Proton Transport in Medium • Models of Dose Distributions • Treatment Implentation • Clinical Applications	**2**	**6**
❖ **Total Body Irradiation (TBI).** • Clinical Goals • Dose and Dose Rate • .Dose Specification • Available Techniques • Dosimetry Considerations	**1**	**3**
❖ **Total Skin Electron Irradiation.** • General Clinical and Patient-Related Problems • .Physical and Practical Requirements	**1**	**3**
❖ **High Dose Rate Brachytherapy.** • Systems of Implant Dosimetry • Implantation Techniques, • Afterloading • Quality Assurance	**2**	**6**
❖ **Students Presentations in Selected Modern Radiotherap Topics**	**1**	**3**
	15 weeks	**45 hrs**

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	**-**	**-**	**-**	**-**	**45**
Credit	**3**	**-**	**-**	**-**	**-**	**3**

3. Additional private study/learning hours expected of students per week. **6**

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	**List the imaging acquisition methods used in 3D treatment planning**	13.Lectures 14.Tutorials 15.Individual Assignment 16.Discussions	t) Solve some example during the lecture. u) Quizzes v) Short exams (mid-term exams) w) Long exams (final) x) Discussions during the lectures. y) Home work.
1.2	**Recognize the basic physical principles of moder radiotherapy treatment techniques**		
1.3	**Outline the merits and drawbacks of external and internal radiotherapy treatment techniques**		
2.0	**Cognitive Skills**		
2.1	**The ability Solve problems related to the patient dose calculation**	11. Analatyical problems in field 12. Individual Assigments 13. Group Assigments 14. Lab work	v) Aissgnments included calculation of patient dose in selscted clinical situations w) Open ended tasks (clinical treatment plans problem) x) Lab exam y) Homework z) Final exam
2.2	**The ability to choose the appropriated field treatment technique for treatment planning**		
2.3	**The ability Compare between the proton and photon beam therapy.** .		

			aa) Short exams bb) Reports
3.0	**Interpersonal Skills & Responsibility**		
3.1	**Demonstrate the protocol for 3D computerized radiotherapy treatment plannig of different treatment techniques**	13. Writing an essay 14. Presentations in some selected topics 15. Small Group Discussion. 16. Visits to Hospitals to Improve Students' Expert in Field	q) Essay (Group Assessment) r) Presentations (individual and Group Assessment) s) Lab exam t) Homework u) Final exam v) Report in field (Individual Assessment)
3.2	**Choose the appropriate field arrangements for selected clinical treatment plans**		
4.0	**Communication, Information Technology, Numerical**		
4.1	**Demonstrate the dose distribution using computerized methods for both internal and external radiotherapy treatment techniques**	14. Group Discussions 15. Reports 16. Presentations 17. Treatment plans of selected clinical situation 18. Simulation radiotherapy treatment planning	l) Essay (Group Assessment) m) Presentations (individual and Group Assessment) n) Report in field (Individual Assessment) o) Treatment plans evaluation using some websites
4.2	**Interpret the difference in isodose distribution of IMRT and 3D-CRT of selected clinical treatment plans**		
4.3	**Illustrate the Protocol of optimum setup of quality assurance for selected clinical situations**		
5.0	**Psychomotor**		
5.1	N/A	N/A	N/A

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	Exercises, Homeworks, In-Class Problem Solving, an essay individual or in groups, and presentations.	Weekly	10 %
2	1st Class Test	7th	10%
3	2nd Class Test	14th	10%
4	Final Practical Test	15th	20%
5	Final Exam	16th -17th	50%

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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (4hrs per week)

E Learning Resources

1. List Required Textbooks

4. F. M. Khan, "The Physics of Radiation Therapy", 5th Edition, Lippincott Williams and Wilkins,U.S.A.,**2015.** (Electronic + Hard Copies)
2. E. B. Podgorsak, (Editor), Radiation Oncology Physics: A Handbook for Teachers and Students, IAEA , **2005**. (electronic copy)
(http://www-pub.iaea.org/MTCD/publications/PDF/Pub1196_web.pdf)

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

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

5- Philip Mayles,Alan Nahum"handbook of radiotherapy physics:theory and practice" Taylor&Francis, **2007.**
6- Faiz.M.Khan "Treatment Planning in radiation Oncology" 3rd aedition,Lippincott

Williams&Wilkins, **2011**.
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc. • http://www.ennovations.co.uk/p/20/interactive-radiotherapy-planning-for-students-irps-version-401 • http://radonc.uams.edu/research/medical-physics-research/dicoman/ • https://www.iaea.org/topics/cancer-treatment-radiotherapy • https://www.radiologyinfo.org/en/info.cfm?pg=ebt • https://www.cancer.gov/about-cancer/treatment/types/radiation-therapy/radiation-fact-sheet
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. N/A

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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Revision of student answer paper by another staff member. • Analysis the grades of students.
3 Processes for Improvement of Teaching • Preparing the course as PPT. • Using scientific flash and movies. • Annual updating of course content.
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) • The instructors of the course are checking together and put a unique process of evaluation. • Check marking of a sample of papers by others in the department.. • Evaluation by the accreditation committee in the university.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. The following points may help to get the course effectiveness • Student evaluation • Course report • Program report • Program Self study According to point 1 the plan of improvement should be given.

Name of Instructor: _____

Signature: _____ Date Report Completed: **20/2/1439 H**

Name of Field Experience Teaching Staff : **Prof**. **Dr. Samir S. Natto**

Program Coordinator: **Saleh M. Alluqmani**

Signature: _____ Date Received: **5/3/1439 H**

Head of Department: **Saleh M. Alluqmani**

Signature: Saleh Date Received: **17/4/1439 H**

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course title: Solid State Physics 1

Course code: 403370-3

Course Specifications

Institution: **Umm AL – Qura University**	Date: **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Solid State Physics 1 (code: 403370-3)**			
2. Credit hours: **3 (3+0+0) Hrs**			
3. Program(s) in which the course is offered. **BSc Physics** (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course **One of the academic staff member**			
5. Level/year at which this course is offered: **4st Year / Level 6**			
6. Pre-requisites for this course (if any) : **Quantum Mechanics 1 (code : 403344)**			
7. Co-requisites for this course (if any) : ---			
8. Location if not on main campus: **Main campus and Alzaher**			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	✓	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?

At the end of the course, the student must be able to :

- Gain knowledge and to be ready to study Solid State Physics 2.
- Be familiar with the basic physics knowledge on Solid State Physics.
- Understand and compare the origin of bonding in materials.
- Discuss and classify the different crystal structures and symmetry operations.
- List and understand the different types of defects in crystals: Point Defects, Thermal Consideration in Formation Energy, Dislocations, Types of Dislocations, Planar Defects.
- Understand how X-Rays Diffraction can be used in studying the solid structure, Experimental Methods for Diffraction..
- Describe the free electrons in metals: The Electrical and Thermal Conductivities, The Resistivity, the Quantum Theory of Free Electrons, Ground State Property of the Free Electron Gas, Electronic Specific Heat of Metals, Hall Effect in Metals, Some Problems (Drawbacks) with the Free Electron Model.
- Understand and appreciate of the Band Theory in Solids: Origin of Bands in Solids, Periodic Potential, Bloch Function, Crystal Structure in a One-Dimensional Atomic Chain, Brillouin Zone, Bands Theory in the Free Electron Model, Density of States, The Effective Mass, The Concept of Hole, Fermi Surface.

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)

1- Explain the strategy of the course in the beginning of the semester
2- Outlines of the physical laws, principles and the associated proofs.
3- Encourage the students to see more details in the international web sites and reference books in the library.
4- Discussing some selected problems in each chapter.
5- Renew the course references frequently
6- Frequently check for the latest discovery in science

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

Course Description:

The course will cover the principle of solid-state physics, such as Crystal Structure, Crystal Binding, Crystal Diffraction, Defects in Crystals, Lattice Vibrations, Some Thermal Properties, Free Electrons in Metals and Band Theory in Solids. At the end of the course, the student must be able to study the course solid-state physics 2.

1 Topics to be Covered		
Topics	**No of Weeks**	**Contact hours**
❖ **Crystal Structure** 15- Classification of Solids 16- The Crystalline State 17- Some Basics Definitions 18- Symmetry Operations 19- Two-Dimensional and Three Dimensional Lattice Types 20- Positions and Directions of Planes in the Crystal 21- Some Simple Crystal Structures 22- Non-Crystalline Solids.	**2**	**6**
❖ **Crystal Binding** 23- Binding Energy in Solids 24- Types of Binding.	**1**	**3**
❖ **Crystal Diffraction** 16- X-ray Diffraction and Bragg's Law, 17- Laue Formulation for x-ray diffraction 18- Diffraction Directions 19- Experimental Methods for Diffraction.	**2**	**6**
❖ **Defects in Crystals** 12- Point Defects 13- Thermal Consideration in Formation Energy 14- Dislocations 15- Types of Dislocations 16- Planar Defects	**2**	**6**
❖ **Lattice Vibrations and Some Thermal Properties** 11- Vibrations of a One-Dimensional Mono-atomic and Diatomic Chains 12- Phonons 13- Lattice Specific Heat, the Classical Model 14- Einstein Model 15- Debye Model 16- The Thermal Conductivity.	**2**	**6**
❖ **Free Electrons in Metals** 11. The Electrical and Thermal Conductivities 12. The Resistivity 13. the Quantum Theory of Free Electrons 14. Ground State Property of the Free Electron Gas 15. Electronic Specific Heat of Metals 16. Hall Effect in Metals 17. Some Problems (Drawbacks) with the Free Electron Model.	**3**	**9**

❖ **Band Theory in Solids** 7. Origin of Bands in Solids 8. Periodic Potential 9. Bloch Function 10. Crystal Structure in a One-Dimensional Atomic Chain 11. Brillouin Zone 12. Bands Theory in the Free Electron Model 13. Density of States 14. The Effective Mass 15. The Concept of Hole 16. Fermi Surface.	**3**	**9**
	15 weeks	**45hrs**

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**45**	**-**	**-**	**-**	**-**	**60**
Credit	**3**	**-**	**-**	**-**	**-**	**3**

3. Additional private study/learning hours expected for students per week. **6**

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 physical quantities, physical phenomena, and basic principles.	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: Board, Power point. 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Discussions during the lectures Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams .
1.2	Describe the physical laws and quantities using mathematics		
2.0	**Cognitive Skills**		
2.1	Apply the laws of physics to calculate some quantities.	1. Preparing main outlines for teaching. 2. Following some proofs. 3. Define duties for each chapter 4. Encourage the student to look for the information in different references. 5. Ask the student to attend lectures for practice solving problem.	1. Exams (Midterm, final, quizzes) 2. Asking about physical laws previously taught 3. Writing reports on selected parts of the course. 4. Discussions of how to simplify or analyze some phenomena.
2.2	Solve problems in physics by using suitable mathematics.		
2.3	Analyse and interpret quantitative results.		
2.4	Apply physical principle on day life phenomena.		
2.5	Derive the physical laws and formulas.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Show responsibility for self-learning to be aware with recent developments in physics	• Search through the internet and the library. • Small group discussion. • Enhance self-learning skills. • Develop their interest in Science through : (lab work, visits to scientific and research institutes).	• Evaluate the efforts of each student in preparing the report. • Evaluate the scientific reports. • Evaluate the team work in lab and small groups. • Evaluation of students presentations.
3.2	Work effectively in groups and exercise leadership when appropriate.		

4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form.	• Incorporating the use and utilization of computer, software, network and multimedia through courses • preparing a report on some topics related to the course depending on web sites	• Evaluating the scientific reports. • Evaluating activities and homework
4.2	Collect and classify the material for the course.		
4.3	Use basic physics terminology in English.		
4.4	Acquire the skills to use the internet communicates tools.		
5.0	**Psychomotor (NA)**		

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	Exercises & Home works	All weeks	10 %
2	Participation in activities lectures	All weeks	10 %
3	Written Test (1)	6th week	15%
4	Written Test (2)	11th week	15%
5	Final Exam (theoretical)	16th week	50%

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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (4hrs per week)

E Learning Resources

1. List Required Textbooks
   1- Charles Kittel, Introduction to Solid State Physics 8th Ed, 2005, John Wiley & sons.
   2- H.P. Myers, Introduction to Solid State Physics, 2nd Ed, 2009 Taylor & Francis
2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) 1- Charles Kittel, Introduction to Solid State Physics 8th Ed, 2005, John Wiley & sons. 2- H.P. Myers, Introduction to Solid State Physics, 2nd Ed, 2009 Taylor & Francis
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each class room there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Class room require a TV screen at least 65 inch-and smart, and double layer white board.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Revision of student answer paper by another staff member. • Analysis the grades of students.
3 Processes for Improvement of Teaching • Preparing the course as PPT. • Using scientific flash and movies. • Periodical revision of course content.

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)

- The instructors of the course are checking together and put a unique process of evaluation.
- Check marking of a sample of papers by others in the department.
- Feedback evaluation of teaching from independent organization.
- Independent evaluation by another instructor that give the same course in another faculty.
- Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

34- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

35- According to point 1 the plan of improvement should be given.

Name of Instructor: _____Loulou Mehrez

Signature: _____ Date Report Completed: _____

Name of Field Experience Teaching Staff _____

Program Coordinator: Saleh M. Alluqmani

Signature: Saleh Date Received: 23/4/1439

ATTACHMENT 5.

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course Specifications

Institution **Umm Al-Qurra University** Date 20/4/1438
College/Department **Faculty of Applied Science, Physics Department**

A. Course Identification and General Information

1. Course title **Biomaterial physics** and code: # Phys 403389
2. Credit hours 3
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) **B.Sc Degree in Medical Physics**
4. Name of faculty member responsible for the course **Assoc. prof. Dr. El-hadi, Ahmed**
5. Level/year at which this course is offered **7**
6. Pre-requisites for this course (if any) **solid state physics**
7. Co-requisites for this course (if any)
8. Location if not on main campus Within The University Campus in **Abdiya (faculty of science)**
9. Mode of Instruction (mark all that apply)

a. traditional classroom	x	What percentage?	50%
b. blended (traditional and online)	x	What percentage?	20%
c. e-learning	x	What percentage?	20%
d. correspondence	x	What percentage?	10%
f. other	x	What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course? The objectives of this course are to tease out the laws of radiation physics from our everyday experience by specific examples of how radiation physics phenomena manifest themselves. We want to be able: The benchmark statement of the main learning outcomes are as follows: 1- They are understanding radiation protection, 2- They will be familiars with radiation background, interaction of radiation with matter, radiation quantities and units **The overall goal is to use the scientific method to come to understand the enormous variety of radiation physics phenomena in terms of a few relatively simple laws**
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) 1. Explain strategy of the course in the beginning of the semester 2. Outlines of the introduction for radiation physical laws, principles and the associated proofs. 3. Highlighting the radiation experiments corresponding to a theoretical subject. 4. Encourage the students to see more details in the international web sites and reference books in the library. 5. Discussing some selected problems in each chapter. 6. Cooperate with different institution to find how they deal with the subject 7. Renew the course references frequently 8- Development of radiation physics laboratory 9- Joining between the theoretical and industrial applications Frequently check for the latest discovery in science

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

Course Description: **The Biomaterials course is divided into four sections: macromolecular polymer & material science, physical characterization & properties,.** **Biomaterials will concentrate on fundamental principles in biomedical physics and material science. This course uses a combination of lectures and student presentations, self-directed learning to examine the structure and properties of hard materials (ceramics, metals) and soft materials (polymers, hydrogels). Specifically, the class will be divided into**

two parts: (I) Biomaterial Science and Engineering, (II) and Polymers.

1 Topics to be Covered

Topic	No of Weeks	Contact hours
Chapter 1 Introduction to Medical Biomaterials: Type of Bio materials, Properties of biomaterials: Physical, thermal, electrical and optical properties of bio-materials and their application to processing **Solved problems** **Quiz 1** **Quiz 2**	1-3	9 hrs 2 hrs
Chapter 2 Novel Biomaterials Uses in medical: Biodegradable materials, Hydrogels, self-assembling peptides, Implants materials, Metallic implant materials, stainless steels, co-based alloys, Ti based alloys, ceramic implant materials, aluminum oxides, hydroxyapatite, glass, ceramics, and carbons **Solved problems.** **Quiz 3**	4-6	9 hrs
First Midterm Exam	7	2 hrs

Chapter 3 Polymers for Medical applications: Polymeric implant, Polymers for drug delivery: types of polymer, pharmaceutical polymers. physicochemical properties of polymers and relationship with structure, properties, kinetics, mechanisms and applications and Materials Nanostructure Devices (DNA-templated and nanowires).	8-12	18 hrs
Chapter 4 **Hydrogels** Natural vs. Synthetic Hydrogels Hydrogels as Tissue Engineering Matrices Preparation of Hydrogels.	13-15	6 hrs
Second Midterm Exam	15	2 hrs

2 Course components (total contact hours per semester):

Lecture: **15** (Credit Hrs)	Tutorial: ------	Practical/Fieldwork/Internship:	Other: **30 hrs**

3. Additional private study/learning hours expected for students per week. (This should be an average :for the semester not a specific requirement in each week): 12h (reports & essay)

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	45	--------		----------	------	45
Credit	30	---------		----------	-----	30

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

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.

For each of the domains of learning shown below indicate:

- A brief summary of the knowledge or skill the course is intended to develop;
- A description of the teaching strategies to be used in the course to develop that knowledge or skill;

The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned

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 Type of Bio materials, Properties of biomaterials: Physical, thermal, electrical and optical properties of bio-materials and their application to processing Explain Biomaterials Uses in medical . Describe Polymers for Medical applications Explain strategy of the course in the beginning of the semester Outlines of the physical laws, principles and the associated proofs. Highlighting the day life applications whenever exist. Encourage the students to see more details in the international web sites and reference books in the library. Discussing some selected problems in each chapter. Cooperate with different institution to find how they deal with the subject Renew the course references frequently Frequently check for the latest discovery in science	1- Demonstrating the basic information and principles through lectures and the achieved applications 2. Discussing phenomena with illustrating pictures and diagrams 3. Lecturing method: a. Board , b. Power point, c. E-learning 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	Solve some example during the lecture. Exams: a) Quizzes (E-learning) b) Short exams (mid-term exams) c) Long exams (final) d) Oral exams Discussions during the lectures.
1.2	To understand relevant of knowledge and theory in other related disciplines and professional fields of advanced optics application	1. Discussions 2. Brain storming 3. Show the best ways to deal with problem 4. Solving problems 5. Active teaching 6. Self-learning 7.Co-operative learning	Home work. Writing scientific paper. Doing team research or team project. Reports . Discussions during the lectures.
2.0	**Cognitive Skills**		
2.1	To gain the skills of solving scientific problems related to industrial problems	1. Following some proofs 2. Define duties for each chapter 3. Homework assignments 4. Encourage the student to look for the	1.Exams 2.Short quizzes 3.Asking about physical laws previously taught 4.Team work projects 5.Solving problems

		information in different references 5. Ask the student to attend lectures for practice solving problem 6- Self learning 7- Project based learning	
2.2	To solve problems in Physics by using suitable mathematical principles	1. Define duties for each chapter 2. Homework assignments 3. Show the best ways to deal with problem 4. Solving problems	Solve some example during the lecture. Exams: a) Quizzes (E-learning) b) Short exams (mid-term exams) c) Long exams (final) d) Oral exams Discussions during the lectures.
3.0	**Interpersonal Skills & Responsibility**		
3.1	To work effectively in groups and exercise leadership when appropriate	1.Brain storming 2.Group discussion 3.Try to solve difficulties in learning: solving problems – enhance educational skills. 4- co-operative learning	Quizzes on the previous lecture Discussion Seminars Home work Reports
3.2			
4.0	**Communication, Information Technology, Numerical**		
4.1	To employ software skills	1. Computational analysis. 2. Data representation. 3. Focusing on some real results and its physical meaning. 4.Lectures for problem solution	The reports using technology. Homework, Problem solutions assignment and exams Results of computations and analysis.
4.2	Acquire the skills to use the internet communicates tools.	Lecturing method: a. Board , b. Power point,	Online Quizzes

		c. E-learning	
5.0	**Psychomotor**		
5.1			
5.2			

5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)

Course LOs #	**Program Learning Outcomes (Use Program LO Code #s provided in the Program Specifications)**																
	1.1	**1.2**	**1.3**	**2.1**	**2.2**	**2.3**	**2.4**	**2.5**	**3.1**	**3.2**	**3.1**	**4.1**	**4.2**	**4.3**	**4.4**	**5.1**	**5.2**
1.1																	
1.2																	
2.1																	
2.2																	
3.1																	
4.1																	
4.2																	

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	First Midterm	6	15%
2	Second Midterm	12	15%
3	Lab. Exam.	no	N0
4	Homework	Every week	5%
5	present	Every week	5%
6	Quizzes	Every month	10%
7	Final Exam.	End of semster	50%
	Total		100%

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) 3 office hours per week

E Learning Resources

1. List Required Textbooks
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc. http://www.biomaterials.com
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 organized for face to face learning Library Boards Suitable lightening system Air condition units Computers and data show
2. Computing resources (AV, data show, Smart Board, software, etc.) Providing numbers of computers for students Updating the computer programs each year
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

Course Evaluation and Improvement

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching *Following up the progress of student in the course* *Evaluating the progress of student by the projects and reports* *Evaluating the course by specialized committees* 2 Other Strategies for Evaluation *Self-evaluation* *Student evaluation* *Evolution by other instructor in the same department or outside it* 3 Processes for Improvement of Course report. Program report. Program self-study. Handling the weakness point By the Accreditation committee in the department.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department
3 Processes for Improvement of Teaching
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) ➧ The instructors of the course are checking together and put a unique process of evaluation **Feedback evaluation of teaching from independent organization.**
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. 1- The following points may help to get the course effectiveness · Student evaluation · Course report · Program report · Program Self study

2- According to point 1 the plan of improvement should be given.
3- Contact the college to evaluate the course and the benefit it add to other courses.

Add some subject and cut off others depending on the new discoveries in physics.

Name of Instructor: _Ahmed Mohamed El-Hadi
Signature: Date Report Completed: _24/4/1438H, 22/1/2017
Name of Field Experience Teaching Staff _Polymer physics
Program Coordinator:_____

Signature: _____ Date Received: _____

Biography of Prophet Mohammed (pbuh)-102101

Course Description

السيرة النبوية 101

أهداف دراسة المادة :

1. فهم القرآن الكريم وأسباب نزوله والحكمة من تشريعاته.
2. التعرف على الأديان المنتشرة في الجزيرة العربية قبل الإسلام.
3. دراسة الغزوات وفهم أسبابها واستخلاص الدروس والعبر منها.
4. استخلاص الدروس التربوية والخلقية والسلوكية التي تضمنتها السيرة النبوية.

توصيف المادة:

دراسة جغرافية الجزيرة العربية وأحوالها قبل بعثة النبي ρ ، ثم دراسة العصر النبوي من ولادة النبي ρ ونشأته حتى بعثته، ومن البعثة حتى الهجرة، ثم دراسة العهد المدني؛ من قيام دولة الإسلام، وعقد المؤاخاة، والمعاهدات، وبعض الغزوات، ثم وفود الإسلام، وحجة الوداع، والوفاة النبوية، وتقديم لمحة عن شمائله، وأخلاقه، وزوجاته الطاهرات.

الجوانب التطبيقية والمهارات المطلوبة:

1- معرفة أوضاع العالم قبيل المبعث.
2- التعرف على عصر النبوة من خلال استعراض وقائعه وأحداثه.
3- القدرة على استنباط الدروس التربوية والسلوكية من أحداث السيرة.

مفردات المادة

تعريف السيرة ومميزاتها وفوائد دراستها.

أهم مصادر ومراجع السيرة.

جغرافية بلاد العرب

مكة ومكانتها

لمحة عن أحوال العالم قبيل بعثة النبي ρ

مكة المكرمة مركزها الديني ، السياسي والاقتصادي قبل الإسلام.

الرسول ρ من مولده إلى بعثته:

- مولده ونشأته
- حادثة شق الصدر
- رحلته إلى الشام مع عمه أبي طالب
- ظهور شخصيته في المجتمع المكي.
- اشتراكه في حرب الفجار.
- حلف الفضول.
- سفره في تجارة السيدة خديجة وزواجه منها.
- بناء الكعبة و الحجر الأسود.
- إرهاصات النبوة.

البعثة النبوية:

- نزول الوحي عليه في الغار.
- مراتب الوحي .
- فترة الوحي.
- خصائص الرسالة وتبرز فيها عالمية الدعوة.

العهد المكي:

- الدعوة سرا
- الجهر بالدعوة.
- موقف قريش من الدعوة.
- الهجرة إلى الحبشة.
- تفنيد قصة الغرانيق.
- إسلام عمر وحمزة رضي الله عنهما.
- صحيفة المقاطعة، والحصار.
- وفاة أبو طالب، وخديجة رضي الله عنها.
- خروجه إلى الطائف.

- الاسراء والمعراج.
- دعوة القبائل.
- بيعتا العقبة.
- الهجرة إلى المدينة.
- خصائص الدعوة في العهد المكي.

العهد المدني:

- مجتمع المدينة عند الهجرة.
- أسس قيام الدولة الإسلامية.
- المسجد.
- المواخاة.
- العهد بين المسلمين واليهود.
- خصائص الدعوة في العهد المدني.

السرايا والغزوات:

السرايا والغزوات قبل بدر: أهدافها ونتائجها

الغزوات الكبرى: غزوة بدر الكبرى غزوة بني قينقاع – غزوة أحد –من آثار غزوة أحد

سرية ماء الرجيع. – سرية بئر معونة. غزوة بني النضير – غزوة الخندق- وغزوة بني قريظة- غزوة بني المصطلق – صلح الحديبية ونتائجه – غزوة خيبر.

انتشار الدعوة الإسلامية:

- انتشار الإسلام.
- مكاتبة الملوك والحكام
- غزوة مؤته.
- فتح مكة.
- غزوة حنين والطائف.
- غزوة تبوك.
- عام الوفود.

- حجة الوداع.

انتقال الرسول ρ إلى الرفيق الأعلى:

- أثر الوفاة على الصحابة رضي الله عنهم.
- أهل الردة وقتال الصحابة لهم.
- صفات الرسول ρ وأخلاقه وشمائله.
- طريقته ρ في الدعوة وتعليم الناس.
- بيت النبوة

المصادر والمراجع

الكتاب المقرر : الكتاب الذي أعدته الجامعة (صحيح الأثر وجميل العبر من سيرة خير البشر)

ابن هشام	السيرة النبوية
ابن سعد	الطبقات الكبرى
ابن كثير	السيرة النبوية
	الفصول في سيرة الرسول ρ
ابن القيم	زاد المعاد
سليمان العودة	السيرة النبوية في الصحيحين وعند ابن اسحاق.
المباركفوري	الرحيق المختوم
زيد عبدالكريم الزيد	فقه السيرة
	روضة الأنوار في سيرة النبي المختار ρ
إبراهيم العلي	صحيح السيرة النبوية

المملكة العربية السعودية
وزارة التعليم العالي
جامعة أم القرى
كلية الدعوة وأصول الدين

الـــرقـــم : .....
الـتـــاريخ : .....
المشفوعات : .....

اسم المقرر : القرآن الكريم (٤)

رقم المقرر : ٤٠١

ساعات المقرر : وحدتان دراسيتان في الأسبوع

موضوعات المنهج :

أولاً : التلاوة :

تلاوة الربع الأول من المصحف الشريف ، من أول سورة (البقرة) إلى نهاية سورة (الأنعام) مع مراعاة أحكام التجويد عامة .

ثانياً : غريب القرآن :

شرح المفردات الغريبة الموجودة في القسم المكلف بتلاوته .

المرجع : كتاب غريب القرآن للراغب الأصفهاني ، أو كلمات القرآن للشيخ حسنين محمد مخلوف.

ثالثاً : أحكام التجويد :

علي الطلاب في هذا الفصل استحضار وتطبيق جميع أحكام التجويد

المملكة العربية السعودية
وزارة التعليم العالي
جامعة أم القرى
كلية الدعوة وأصول الدين

الـــرقـــم : .....
الـــتـــاريخ : .....
المشفوعات : .....

المرجع :

البرهان في تجويد القرآن للشيخ / محمد الصادق قمحاوي .

المراجع الأخرى :

- العميد للشيخ / محمود علي بسه .
- هداية القاري إلى تجويد كلام الباري للشيخ / عبد الفتاح المرصفي .
- نهاية القول المفيد في علم التجويد ، للشيخ / محمد مكي نصر .

رابعاً : الحفظ:

حفظ جزء (الذاريات) بكامله ، مع استمرار حفظ الأجزاء الثلاثة السابقة .

Level Eight

403498-5 Hospital Training

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation & Assessment

T6. Course Specifications (CS)

Course Title: Hospital Training

Course Code: 403498-5

Course Specifications

Institution: **Umm AL – Qura University**	Date : **17/4/1439**
College/Department : **College of Applied Science – Department of Physics**	

A. Course Identification and General Information

1. Course title and code: **Hospital Training**		**(Code: 403498-5)**
2. Credit hours: **5 Hrs**		
3. Program(s) in which the course is offered. **B.Sc Medical Physics** (If general elective available in many programs indicate this rather than list programs)		
4. Name of faculty member responsible for the course **Prof. Saud Allehyani**		
5. Level/year at which this course is offered: **4rd Year / 8th Level**		
6. Pre-requisites for this course (if any): **Department agreement**		
7. Co-requisites for this course (if any): **NIL**		
8. Location if not on main campus: **in the hospitals related to the training**		
9. Mode of Instruction (mark all that apply)		
a. traditional classroom	✓	What percentage? **100%**
b. blended (traditional and online)		What percentage?
c. e-learning		What percentage?
d. correspondence		What percentage?
f. other		What percentage?
Comments:		

B Objectives

1. What is the main purpose for this course?

Summary of the main learning outcomes for students enrolled in the course.

The course aims to give the students the chance to:

1- Understand the optimum basic technical X-ray operating conditions of different **diagnostic x-ray machines (X-rays, CT,fluoroscopy, and diagnostic, mammography) and** find how they deal with the patients
2- Understand basic technical operating conditions of preparation of radio isotopes in **nuclear medicine**
3- Understand basic technical operating conditions of Gamma camera and linear accelerator.
4- **Measure the dose out for X-ray machines, linear accelerators and CTDI for CT.**
5. Practicing in how to do treatment Planning and Dose rate calculation
1- Initialize the r**adiation protection medical practices**

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)

1- To Perform quality control for X-ray machines.
2- Measure the entrance skin doses for patients during different X-ray imaging.

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

Course Description:
The course will cover the principle of different medical X-ray machines, diagnostic and radiotherapy machines.. This course will provide the essentials of different medical imaging practices..

1 Topics to be Covered		
Topics	**No of Weeks**	**Contact hours**
Practicing on how to make adjustment of an operating parameters of diagnostic X-ray machines	**3**	**75**
Practicing in how to dial with Radioactive isotopes Preparations	**3**	**75**
Practicing in how to do treatment Planning and Dose rate calculation	**3**	**75**
Practicing in how to protect the patients and Staff Dept form Radiation Hazard and how to use TLD badges	**3**	**75**
Practicing in how to define the Tumor and localize its position	**3**	**75**
Oral Presentation	**1**	**25**
	15 weeks	**325 hrs**

-

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**325**	-	-	-	-	**325**
Credit	**5**	-	-	-	-	**5**

3. Additional private study/learning hours expected of students per week.	**10**

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**		
	. Understand the basic physical principles of different X-ray examinations. a2. List the tools required for each quality control examination/ a3. Outline the merits and drawbacks of each diagnostic and therapeutic X-ray machines.. a4. Use an appropriate ion chamber that connect with non invasive KV meter to measure dose out put of different X-ray and linear accelerators machines.	*17.* Demonstrating the basic information and principles through medical training *18.* Start each medical training practice by general idea and the benefit of it. *19.* Brain storming sessions. *20.* Discussions. 21. Self learning	• Report • Presentation • Discussion
2.0	**Cognitive Skills**		
	b1.Interpret the quality control factors measurements of different X-ray examinations b2. Compare between the properties of X-ray and CT. b3. Generate reference dose levels for different X-ray instruments.	▪ Using Cal-Dose program to calculate the entrance skin dose ▪ Group Discussion ▪ Encourage the student to look for the information in different references	▪ Seminars

3.0	**Interpersonal Skills & Responsibility**		
	c1. Summarize the different procedures of imaging. *c2-* justify the essential parts of different clinical situations and formulate a strategy for the optimum setup of each clinical situation.	▪ Cooperation with a lot of hospitals in makkah, Jeddah,Taif and Riyadh	*Assessment of group assignment includes component for individual contribution. Capacity for independent study assessed in individual assignments.* w)Report
4.0	**Communication, Information Technology, Numerical**		
	d1.Use software to calculate the out put doses of different modalities and treatment planning software d2. Work in dependently and in group to represent a seminar about topic related to the study. d3. Use internet to search for topics and writing reports d4. Know the standards for writing a good report	19. Group seminar discussion 20. Reports about different tasks	p) Report assignment
5.0	**Psychomotor**		
5.1	N/A	N/A	N/A

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	Reports (reports/training program)	End of the training project	70 %
2	Oral presentation	End of semester	30 %

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) Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (2 hrs per week)

E Learning Resources

1. List Required Textbooks
1- Medical Imaging Physics. W.R. Hendee&E.R. Ritenour, 2nd Eds, Wiley, 2002 2- Essential Nuclear Medicine Physics. R.A.Powsner&E.R.Powsner, 1st Eds, Blackwell publishing Ltd,2006. 3- PET Physics, Instrumentation and Scanners. M.E.Phelps, 2nd Eds., Springer,2006. 4- Positron Emission Tomography. D.L.Bailey&D.V.Townsend, 1st Eds., Springer, 2005
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) 1- Philip Mayles,Alan Nahum"handbook of radiotherapy physics:theory and practice" Taylor&Francis, **2007.** 2- Faiz.M.Khan "Treatment Planning in radiation Oncology" 3rd aedition,Lippincott Williams&Wilkins, **2011**.
21. List Electronic Materials, Web Sites, Facebook, Twitter, etc. ▪ http://www.excelmedicalimaging.com/ ▪ http://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=6159236 ▪ http://www.nema.org/prod/med/ • http://www.ennovations.co.uk/p/20/interactive-radiotherapy-planning-for-students-irps-version-401 • http://radonc.uams.edu/research/medical-physics-research/dicoman/ • https://www.iaea.org/topics/cancer-treatment-radiotherapy • https://www.radiologyinfo.org/en/info.cfm?pg=ebt • https://www.cancer.gov/about-cancer/treatment/types/radiation-therapy/radiation-fact-sheet

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. N/A

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.) There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board.
2. Computing resources (AV, data show, Smart Board, software, etc.) In each classroom and laboratories, there is a data show, and board.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Each Class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course reports • Course evaluation.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department • Revision of student answer paper by another staff member. • Analysis the grades of students.
3 Processes for Improvement of Teaching • Preparing the course as PPT. • Using scientific flash and movies. • Annual updating of course content.
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) • The instructors of the course are checking together and put a unique process of evaluation. • Check marking of a sample of papers by others in the department.. • Evaluation by the accreditation committee in the university.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

1- The following points may help to get the course effectiveness
   - Student evaluation
   - Course report
   - Program report
   - Program Self study
2- According to point 1 the plan of improvement should be given.

Name of Instructor: **Prof. Dr. Prof. Saud Allehyani**

Signature: _____ Date Report Completed: **14/4/1439 H**

Name of Field Experience Teaching Staff : ……

Program Coordinator: **Saleh M. Alluqmani**

Signature: Saleh Date Received: **5/3/1439 H**

Head of Department: **Saleh M. Alluqmani**

Signature: Saleh Date Received: **17/4/1439 H**