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

## Module Handbook of Medical Physics Program

**Current Study Plan 1437** 







## Content

## Medical Physics Program

- Introduction to Plan 37
- ✓ Program Specification
- √ Course Specification

**Prepared by** 

**Department of Physics** 

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سعادة وكيلة الكلية لفرع الطالبات د/ رجاء معتوق



سعادة وكيل الكلية د./ حاتم الطس



سعادة وكيل الكلية للتطوير الجامعي الدكتور/ فهد الهاشمي



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سعادة وكيلة القسم لفرع الطالبات الدكتوره/ زينب مطر

#### مقدمة

### الممر سرب العالمين والصلاة والسلام على سيرنا 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 1395/1394ه 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. وفي 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، والخطة 37، والخطة 37، والأخيرة هي الأحدث وهى قيد التنفيذ الأن، وفيما يلى نستعرض توزيع المقررات وتوصيف البرنامج وتوصيف الخطة 37.

وفقنا الله وإياكم الى ما يحبه و يرضاه ،،،

#### قسم الفيزياء

#### The description of the Medical Physics Curriculum 1437 A.H

(Credit hours 136 h)

Course Code	Course Title	Required or Elective	Credit Hours	College or Department
First year		=		
	Level 1 (Se	emester 1)		
4041101	Calculus (1)	R	4	Faculty of Applied Science / Dept. of Mathematics
4021101	General Chemistry	R	4	Faculty of Applied Science / Dept. of Chemistry
7004101	English Language - General	R	4	English Language Institute
605101	Holy Quran I	R	2	
601101	Islamic Culture I	R	2	
	Total		16	
	Level 2 (Se	emester 2)		
4031101	General Physics	R	4	Faculty of Applied Science / Dept. of Physics
4011101	General Biology	R	4	Faculty of Applied Science / Dept. of Biology
7004102	<b>English for Science</b>	R	4	English Language Institute
501101	Arabic Language	R	2	Faculty of Arabic Language
102101	The Biography of the Prophet Mohammad (PBUH)	R	2	
	Total		16	
Second year	Level 3 (Se	emester 3)		
4032280	Fundamentals of Medical physics	R	4	Faculty of Applied Science / Dept. of Physics
4032102	General physics (2)	R	4	Faculty of Applied Science / Dept. of Physics
4032121	Electricity and magnetism	R	4	Faculty of Applied Science / Dept. of

				Physics
4041502	Differentiation and	R	4	Faculty of Applied
	Integration (2)			Science / Dept. of
	3			Mathematics
4012312	Cell Biology	R	2	Faculty of Applied
				Science / Dept. of
				Biology
	Total		18	
	Level 4 (Se	mester 4	)	
4032293	Biomechanics	R	3	Faculty of Applied
				Science / Dept. of
				Physics
4032141	Theoretical Methods in	R	4	Faculty of Applied
	Physics(1)			Science / Dept. of
4022150	M. I. Di. :			Physics
4032150	Modern Physics	R	4	Faculty of Applied
				Science / Dept. of Physics
4013331	Biology-Physiology	R	3	Faculty of Applied
4013331	Diology-1 Hysiology	K	3	Science / Dept. of
				Biology
605201	Holy Quran II	R	2	210108,
601201	Islamic Culture II	R	2	
	Total		18	
Third year				
<b>y</b>	Level 5 (Se	mester 5	)	
4033290	Physics of Medical	R	2	Faculty of Applied
	Ultrasound			Science / Dept. of
				Physics
4033281	Physics of medical laser	R	2	<b>Faculty of Applied</b>
				Science / Dept. of
40.555.5		_		Physics
4033285	Radiation Medical	R	4	Faculty of Applied
	physics(1)			Science / Dept. of
4033298	Physics of cell membrane	R	2	Physics Faculty of Applied
4033470	& Macromolecules	N		Science / Dept. of
	& Macioniolecties			Physics
4033145	Quantum Mechanics (1)	R	4	Faculty of Applied
				Science / Dept. of
				Physics
601301	Islamic Culture III	R	3	
	Total		17	

	Level 6 (Se	emester 6)		
4033283	Health Physics	R	3	Faculty of Applied Science / Dept. of Physics
4033292	Radiation Medical physics(2)	R	4	Faculty of Applied Science / Dept. of Physics
4034170	Solid State Physics(1)	R	4	Faculty of Applied Science / Dept. of Physics
4033132	Electromagnetism (1)	R	3	Faculty of Applied Science / Dept. of Physics
4034160	Nuclear Physics	R	4	Faculty of Applied Science / Dept. of Physics
	Total		18	
Fourth year	Level 7 (Se	emester 7)		
4034291	Computer Applications in Medical physics	R	2	Faculty of Applied Science / Dept. of Physics
4034289	Physics of Medical Imaging	R	3	Faculty of Applied Science / Dept. of Physics
4034286	Physics of radiotherapy	R	4	Faculty of Applied Science / Dept. of Physics
4034295	Physics of Nuclear Medicine	R	4	Faculty of Applied Science / Dept. of Physics
4034296	Physic of Bio-Material	R	3	Faculty of Applied Science / Dept. of Physics
605301	Holy Quran III	R	2	
	Total		18	
	Level 8 (Se	emester 8)		
4034998	Hospital Training	R	11	
605401	Holy Quran IV	R	2	
601401	Islamic Culture IV	R	2	
	Total		15	

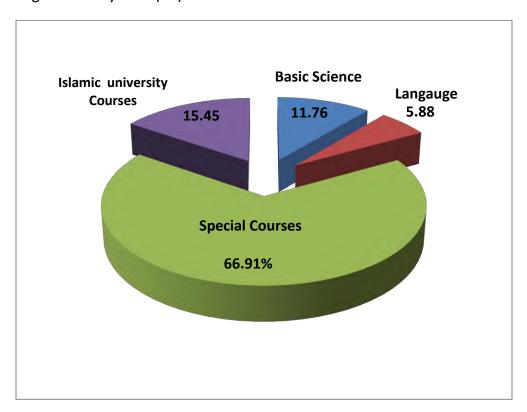


Figure 1: The Curriculum Structure of the program.

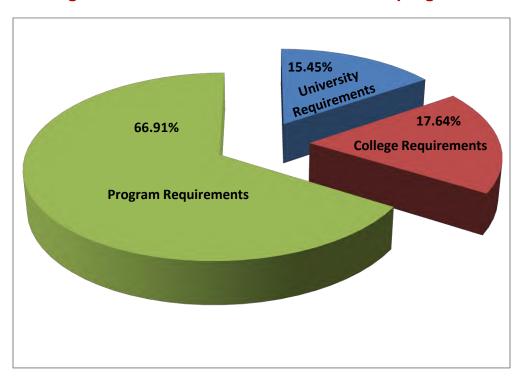


Figure 2: Curriculum Distribution.

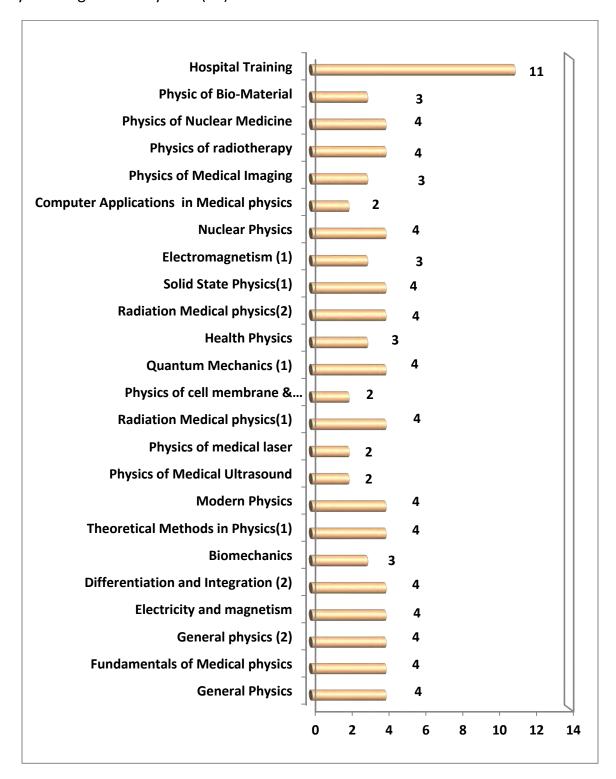
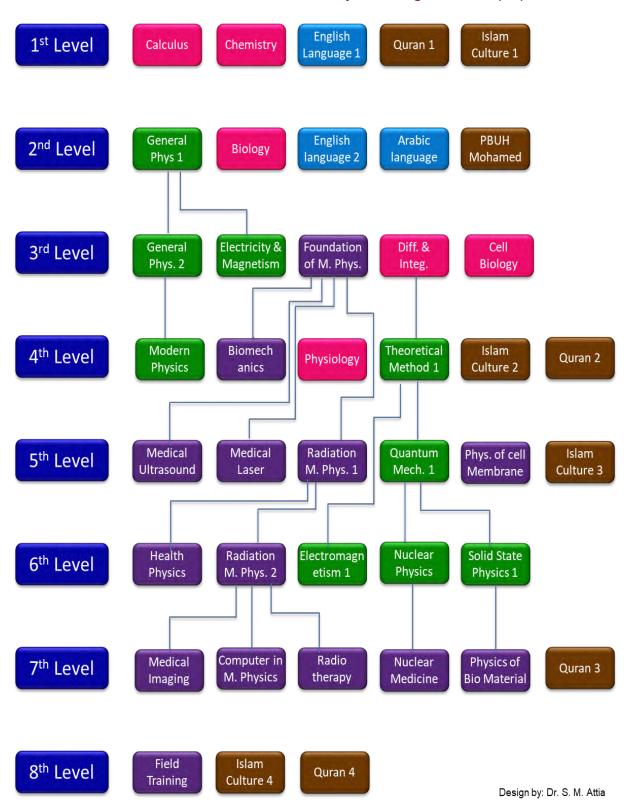


Figure 3: Credit hours distribution.

#### Curriculum Scheme for Medical Physics Program Plan (37)



## Program Specification Plan 37

## Kingdom of Saudi Arabia The National Commission for Academic Accreditation & Assessment (NCAAA)



### T4. Program Specifications (PS)





Program code: 40301



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

#### National Commission for Academic Accreditation & Assessment **Program Specifications**

For guidance on the completion of this template, please refer to NCAAA guidebooks.

- 1. Institution Umm AL-Qura University Date of Report: Feb 2019
- 2. College/Department: Faculty of Applied Science / Department of Physics

#### A. Program Identification and General Information

- 1. Program title and code: Medical Physics (MedPhys)
- 2. Total credit hours needed for completion of the program: 136 credit hours in 8 semesters (4 years).
- 3. An award granted on completion of the program: **Bachelor of Science (B.Sc.) in Medical Physics**
- 4. Major tracks/pathways or specializations within the program (e.g. Transportation or structural engineering within a civil engineering program or counselling or school psychology within a psychology program)

#### N/A

5. Intermediate Exit Points and Awards (if any) (e.g. Associate degree within a bachelor degree program)

#### N/A

- 6. Professional occupations (licensed occupations, if any) for which graduates are prepared. (If there is an early exit point from the program (e.g. Diploma or associate degree) includes professions or occupations at each exit point)
  - Radiation protection
  - Radioisotopes production laboratories
  - Quality Control insurance in checking linear accelerator output and other therapy machine



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Nuclear Medicine Departments
Environmental protection agencies
Medical Physics Research Center
7. (a) New Program Planned starting date
(b) Continuing Program ✓ Year of most recent major program review: 1437 H
An organization involved in recent major review (eg. Internally within the institution,
Accreditation review by Submitted for accreditation by German organization ASIIN Other: Departmental curriculum committee
The program was revised by external reviewers:
(1)- Prof. Mohsen Mohamed Mossad
Professor of Solid State Physics – Kafrelshiekh University – Egypt
(2)- Prof. Taher Morsi Attia Sharshar
Prof. of Nuclear Physics – Taif University – Taif – Saudi Arabia
8. Name of program coordinator or chair. If a program coordinator or chair has been appointed for the female section as well as the male section, include names of both.
Dr Saleh Alluqmani (Program Chairman)
9. Location if not on main campus or locations if program is offered in more than one location.

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#### **B. Program Context**

- 1. Explain why the program was established.
- a. Summarize economic reasons, social or cultural reasons, technological developments, national policy developments or other reasons.
  - **Program Aims:** Development of Medical Physics knowledge of the Kingdom
  - Serving at the radiation protection, Nuclear Medicine, Radiotherapy
  - Departments in Specialist Hospitals in Saudi Arabia
  - Supplying highly qualified Medical Physic Students for research and development laboratories center.

Career Prospect: Umm Al-Qura University Physics graduates are qualified to enter a variety of careers in academia, research centers, and industry. Many of our students continue in a research career or find employment in universities, or Schools, and in Research Institutes. Others have found positions in Industry (petrochemical companies, SABIC, Water companies, Oils and soap factories, etc.). As scientists with developed numeracy and communication skills, our graduates also have qualifications suited to a wide variety of occupations related to the field of Science especially Physics.

- b. Explain the relevance of the program to the mission and goals of the institution.
  - Providing other scientific disciplines with the basic knowledge needed for their professions.
  - Providing manpower needed for the development plans in the Kingdom.
- 2. Relationship (if any) to other programs offered by the institution/college/department.
- a. Does this program offer courses that students in other programs are required to take? Yes

If yes, what has been done to make sure those courses meet the needs of students in the other programs?

Some of the courses of physics are introduced to another department. General physics (403101-4) is introduced to the student of Mathematics, Biology, and chemistry.

b. Does the program require students to take courses taught by other departments? Yes

If yes, what has been done to make sure those courses in other departments meet the needs of students in this program?

By arranging a yearly meeting to discuss the best course content to the program. The



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department of Physics (Medical Physics) will communicate its needs to other departments to ensure that the course coverage fulfills the need of Physics department students. The syllabi of the courses are reviewed by the Undergraduate Committee of the department to ensure compliance to the department's needs. The department must approve the syllabi of the courses offered by the other departments.

Some of these courses are university requirements (a total of 21 credit hours that include Holy Quran, Islamic Culture and Arabic language) and the department has no relevance to involve in the content of these courses.

However, this program include a course offered by the Department of Chemistry (General chemistry), the Department of Biology (General Biology), (Cell Biology) and (Biology-Physiology) and Mathematics (Calculus -4, differentiation and integration (2))

3. Do students who are likely to be enrolled in the program have any special needs or characteristics? (e.g. Part time evening students, physical and academic disabilities, limited IT or language skills).

#### Yes:

- Adequate preparation and achievement in mathematics and sciences at the general education level.
- English language proficiency Knowledge of computer skills.

Students have to be prepared at the general education level and through a preparatory year or at the undergraduate level in English Language, mathematics, sciences, computer skills.

4. What modifications or services are you providing for special needs applicants?

N/A

#### C. Mission, Goals and Objectives

1. Program Mission Statement (insert)

The program has a strong commitment to excellence in the discovery and transmission of knowledge in the field of Medical Physics, to serve and develop community.

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2. List goals and objectives of the program within to help achieve the mission. For each goal and objective describe the major strategies to be followed and list the indicators that are used to measure achievement.

Goals and Objectives	Major Strategies	Measurable Indicators
1- Acquired basic	Seek ASIIN and NCAAA	- Ratio of students to
knowledge of medical	accreditation.	teaching staff.
physics related to human anatomy and physiology of body.	<ul> <li>Demand a certain level of excellence in Medical Physics courses.</li> <li>Provide outstanding students with scholarships to attend some courses at international universities.</li> </ul>	<ul> <li>Proportion of teaching staff with verified doctoral qualifications.</li> <li>Students Satisfaction of the courses quality in the program</li> <li>Employer satisfaction of the alumni abilities</li> <li>Students' satisfaction of the Field experience</li> </ul>
		training.
<b>2-</b> Develop the ability to	• Attracting high quality	- Students' satisfaction of
perform the clinical support procedures required by a medical physicist.	<ul> <li>Faculty and Staff.</li> <li>Improving Faculty/Staff skills by continuous training and professional development.</li> <li>Inclusion of students in research activities</li> <li>Encourage critical thinking activities</li> </ul>	the counselling, academic and professional services.  • Proportion of members of teaching staff with at least one refereed publication during the previous year.  • Number of papers or reports presented at academic conferences during the past year per member of teaching staff.
<b>`3-</b> Emphasized the	• Encouraging applied	Students' satisfaction of the



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student's ability to retrieve,	research work for the	counselling, academic and
manage, and utilize	benefit of society.	professional services.
information for solving		• Proportion of full time
problems for the	• Focus on communication	students commencing
implementation of radiation	and presentation skills	undergraduate programs
safety practices and		who complete these
procedures including the	• Participation in social	programs in minimum time
determination of radiation	and innovative activities	specified for the program.
shielding requirements.	that support community	
	service	
4- Practice, ethical,	- Continue to promote	Rate of employer
responsible, reliable, and	effective student participation in scientific	satisfaction of the alumni
dependable behavior in all	activities.	abilities.
aspects of their	• Encourage participation	• Rate of students'
professional lives, and a	of students in social and	satisfaction of the Field
commitment to the	cultural activities.	experience training.
profession and society.		

#### D. Program Structure and Organization

#### 1. Program Description:

List the core and elective program courses offered each semester from Prep Year to graduation using the below Curriculum Study Plan Table (A separate table is required for each branch IF a given branch/location offers a different study plan).

A program or department manual should be available for students or other stakeholders and a copy of the information relating to this program should be attached to the program specification. This information should include required and elective courses, credit hour requirements and department/college and institution requirements, and details of courses to be taken in each year or semester.

#### The description of the Medical Physics Curriculum 1437 A.H



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#### (Credit hours 136 h)

Course Code	Course Title	Required or Elective	Credit Hours	College or Department
First year	I. luca	45		
	Level 1 (Se			
4041101	Calculus (1)	R	4	Faculty of Applied Science / Dept. of Mathematics
4021101	General Chemistry	R	4	Faculty of Applied Science / Dept. of Chemistry
7004101	English Language - General	R	4	English Language Institute
605101	Holy Quran I	R	2	
601101	Islamic Culture I	R	2	
	Total		16	
	Level 2 (Se	emester 2)		
4031101	General Physics	R	4	Faculty of Applied Science / Dept. of Physics
4011101	General Biology	R	4	Faculty of Applied Science / Dept. of Biology
7004102	English for Science	R	4	English Language Institute
501101	Arabic Language	R	2	Faculty of Arabic Language
102101	The Biography of the Prophet Mohammad (PBUH)	R	2	
	Total		16	
Second year		omostov 2)		
4022200	Level 3 (Se		ī	Foculty of Applical
4032280	Fundamentals of Medical physics	R	4	Faculty of Applied Science / Dept. of Physics
4032102	General physics (2)	R	4	Faculty of Applied Science / Dept. of Physics
4032121	<b>Electricity and magnetism</b>	R	4	Faculty of Applied

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	T T			G: /D / 6
				Science / Dept. of
40.41.502	D:66	n	4	Physics
4041502	Differentiation and	R	4	Faculty of Applied
	Integration (2)			Science / Dept. of
1010010				Mathematics
4012312	Cell Biology	R	2	Faculty of Applied
				Science / Dept. of
				Biology
	Total		18	
	Level 4 (Se	mester 4	)	
4032293	Biomechanics	R	3	Faculty of Applied
				Science / Dept. of
				Physics
				J
4032141	Theoretical Methods in	R	4	Faculty of Applied
	Physics(1)			Science / Dept. of
				Physics
4032150	Modern Physics	R	4	Faculty of Applied
100220	1.20 0.011 2 1.3 0.00			Science / Dept. of
				Physics
4013331	Biology-Physiology	R	3	Faculty of Applied
1020002	Diology 1 my blology			Science / Dept. of
				Biology
605201	Holy Quran II	R	2	
601201	Islamic Culture II	R	2	
	Total		18	
Third was	1000		10	
Third year				
	Level 5 (Se	mester 5	)	
4033290	Physics of Medical	R	2	Faculty of Applied
	Ultrasound			Science / Dept. of
				Physics
4033281	Physics of medical laser	R	2	Faculty of Applied
	_			Science / Dept. of
				Physics
4033285	Radiation Medical	R	4	Faculty of Applied
	physics(1)			Science / Dept. of
	<b>1 3 3 3 3 3</b>			Physics
4033298	Physics of cell membrane	R	2	Faculty of Applied
	& Macromolecules			Science / Dept. of
	33 2:-1132 3.443 4423			Physics
4033145	Quantum Mechanics (1)	R	4	Faculty of Applied
7000170	Quantum Mechanics (1)		_	Science / Dept. of
				Physics
				1 Hysics

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601301	Islamic Culture III	R	3	
001301	Total	K	17	
	Lovel CC	···· • • • • • • • • • • • • • • • • •		
4022202	Level 6 (Se			T 1/ 0 / 1 1
4033283	Health Physics	R	3	Faculty of Applied Science / Dept. of Physics
4033292	Radiation Medical physics(2)	R	4	Faculty of Applied Science / Dept. of Physics
4034170	Solid State Physics(1)	R	4	Faculty of Applied Science / Dept. of Physics
4033132	Electromagnetism (1)	R	3	Faculty of Applied Science / Dept. of Physics
4034160	Nuclear Physics	R	4	Faculty of Applied Science / Dept. of Physics
	Total		18	
Fourth year	Level 7 (Se	emester 7		
4034291	Computer Applications in Medical physics	R	2	Faculty of Applied Science / Dept. of Physics
4034289	Physics of Medical Imaging	R	3	Faculty of Applied Science / Dept. of Physics
4034286	Physics of radiotherapy	R	4	Faculty of Applied Science / Dept. of Physics
4034295	Physics of Nuclear Medicine	R	4	Faculty of Applied Science / Dept. of Physics
4034296	Physic of Bio-Material	R	3	Faculty of Applied Science / Dept. of Physics
605301	Holy Quran III	R	2	
	Total		18	
	Level 8 (Se	emester 8)		
4034998	Hospital Training	R	11	
605401	Holy Quran IV	R	2	



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601401	Islamic Culture IV	R	2	
	Total		15	

#### Total credit hours 136.

2. Development of Special Student Characteristics or Attributes

List any special student characteristics or attributes beyond normal expectations that the institution, college or department is trying to develop in all of its students. (eg. Eg. Particularly good at creative problem solving, leadership capacity, commitment to public service, high level of skills in IT). For each special attribute indicate the teaching strategies and student activities to be used to develop it.

student activities to be used to develop it.					
Special Attributes	Strategies or Student Activities to Develop these Special Attributes				
Commitment to the environment issues	Special emphasis on environmental awareness in the curriculum throughout the program.				
Observing safety rule and regulations when handling the Radio-pharmaceutical	Including the safety aspects in the lecture and laboratory courses.				
Quality control awareness	Including quality control of. Radio pharmaceutical in the laboratory courses Inclusion of case studies involving inadequate quality control in radiotherapy and in relevant courses.				

### 3. Required Field Experience Component (if any, e.g. internship, cooperative program, work experience).

Summary of practical, clinical or internship component required in the program. Note: see Field Experience Specification

Note that a more detailed Field Experience Specification comparatives to a course specification should also be prepared in a separate document for any field experience required as part of the program.

a. Brief description of field experience activity

Field experience through summer training or cooperative programs in Hospitals at the end of fourth year.

b. At what stage or stages in the program does the field experience occur? (e.g. Year, semester)

In the fourth year (Level 8)

c. Time allocation and scheduling arrangement. (eg. 3 days per week for 4 weeks, full time for one semester):

Full time work in Hospitals for 15 weeks

- d. Number of credit hours (if any)
- 11 Credit hours



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#### 4. Project or Research Requirements (if any)

Summary of any project or thesis requirements in the program. (Other than projects or assignments within individual courses) (A copy of the requirements for the project should be attached.)

#### a. Brief description

Senior research projects: students practice different techniques and principles of Medical Physics (radiotherapy program simulation), submit a final project report and make an oral presentation.

b. List the major intended learning outcomes of the project or research task.

Code #	NQF Learning Domains And Program Learning Outcomes	Teaching program Strategies	Program Assessment Methods
1.0 Know	vledge		
Summ be ac programation and samplication are concernication and samplication are concernication are concerni	nary description of the knowledge to equired and on completing this ram, students will be able to:  Acquire the major aspects of nature subject of medical physics and the cation of physics to medicine.  Recognize the human body ology and the application of physical pts of body cell membranes, bone anics, and the principles of laser and plication in medicine.	<ul> <li>Demonstrating the basic information and principles through medical training</li> <li>Start each medical training practice by general idea and the benefit of it.</li> </ul>	Quizzes- Oral and written exam
know to di medic utlras magn a4. mathe analy	how to analysis data which is used agnose with the aid of different cal devices such as gamma camera, soic imaging and X- ray, nuclear etic resonance machines.  Define different quantitative, ematical science and physical tools ze problems and list some lations of systems theory to solve and	<ul> <li>Brain storming sessions.</li> <li>Lecturing-interactive discussion.</li> <li>Self learning</li> </ul>	

**Academic Accreditation & Assessment** 



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#### analysis different problems. a5. Recognize the nature, properties, dosimetery of radiation and basics of radiation protection and also medical effects of ionizing and non-ionizing radiation. a6. Outline the principles of physics of different medical radiation devices and their modern advances, especially in medical radiation therapy and different applications in medical physics. 2.0 **Cognitive Skills** Summary description of the Cognitive Skills to be acquired and on completing this program, students will be able to: • *Solving problems.* **b1**. Reorganize mathematical and Dialogues and Quizzesphysical formulas and demonstrate skills discussions. critical thinking and analytical Assignments-Lectures reasoning to solve problems in medical Exams. Looking in the physics and related fields of studies. internet. ■ Report- Oral **b2.** Interpret the data obtained from ■ Experimental work presentation. testing, diagnostic instruments such as and its outcomes. MRI, X-rays, ultrasonic images, CT Observation-Projects images and gamma camera images. Workshops *Test-Report.* Web-based activities b3. Analyze and apply the mathematical Analytical Individual and in expressions evaluating and reports Group Assigments understanding of essential facts, concepts, principles and theories of medical Encourage the Case studies physics. student to look for Project report the information in **b4.** Formulate and test hypotheses using different references. appropriate experimental design and analysis of data (Computer simulation) and integrate IT-based solutions into the user environment effectively.

**Interpersonal Skills & Responsibility** 

3.0



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	Summary description of the Interpersonal Skills, and Responsibility to be acquired and on completing this program students will be able to:  c1. Analyze and evaluate information by using computational tools to interpret experimental data relevant to medical physics by using packages from different theoretical and experimental resources, and perspectives.  c2. Operate some medical instruments such as that used for the diagnosis of different diseases in medical centers and demonstrate competency in laboratory techniques and safety.  c 3. Use scientific literature effectively and prepare technical reports that for individual student or making a group of researchers.  c4. Justify ethical, social and legal responsibilities concerning Medical Physics.	<ul> <li>Project- Lab work.</li> <li>Group and interactive discussion.</li> <li>Project- Lab work-field visit-         <ul> <li>Interactive discussion.</li> <li>Lecture, research activities brain storming</li> <li>Case studies</li> </ul> </li> </ul>	<ul> <li>Observation-</li> <li>Assignment-</li> <li>Reports-</li> <li>Survey</li> </ul>
4.0	Summary description of the Communication, Information Technology and Numerical Skills to be acquired and on completing this program students will be able to:  d1. Illustrate and employ the processes of scientific inquiry and research methods through use effective information and communications technology (IT) tools and use the basic software, to ensure globally understand of medical physics issues.  d2. Demonstrate scientific concepts and analytical argument, in a clear and organized way, verbally and in writing.	<ul> <li>Small group     discussion.</li> <li>Small group work     brainstorming.</li> <li>Project- Lab work –     Interactive     discussion.</li> </ul>	<ul> <li>Individual presentation.</li> <li>Group reports.</li> <li>Exams, Individual presentation</li> <li>Group presentation</li> <li>Case studies.</li> <li>Exams, Analytical</li> </ul>



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	d3. Implement all kinds of relevant information in medical physics through the use of local and internationally accessible libraries, information database, and electronic data and use that information in problem solving activities.  d4. Work independently and demonstrate the ability to manage time and to work as a part of a team, and learn independently with open—mindedness to learn how solve the daily life problems.		reports.
5.0	Psychomotor		
5.1	N/A	N/A	N/A

c. At what stage or stages in the program is the project or research undertaken? (e.g. Year, semester)

#### 4<sup>th</sup> Year / final (8<sup>th</sup>) semester

d. Number of credit hours (if any)

#### 11 credit hours

e. Description of academic advising and support mechanisms for students.

Each student will be assigned an academic advisor who will act as a mentor, providing academic and career advice, and general counseling. Each student will be required to meet his advisor at least twice a semester, one at the beginning of his registration and the other one towards the end of the semester. The department will provide support to the students in the form of hosting extracurricular activities, field trips, and seminars by inviting guest speakers, and providing an interactive learning environment. The chairman will be available to meet the students and listen to their academic problems and concerns. College club will be formed to help students undertake their activities

f. Description of assessment procedures (including a mechanism for verification of standards)

A self-assessment of the program will be carried out every two years to identify areas of weaknesses that require attention, using NCAAA guidelines wherever applicable. Since this is a new program and it will require four years to have the first batch of graduates, no employment and alumni data will be available for the first two years. Self-evaluation will be carried out using faculty input, course files, and students' evaluation of courses to objectively determine the course coverage, students' learning and satisfaction.

# العينة الواحدية التمويز المائة المائ

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#### Learning Outcomes in Domains of Learning, Assessment Methods and Teaching Strategy

Program Learning Outcomes, Assessment Methods, and Teaching Strategy work together and are aligned. They are joined together as one, coherent, unity that collectively articulate a consistent agreement between student learning and teaching. The National Qualification Framework provides five learning domains. Learning outcomes are required in the first four domains and sometimes are also required in the Psychomotor Domain. On the table below are the five NQF Learning Domains, numbered in the left column. For Program Accreditation there are four learning outcomes required for knowledge and cognitive skills. The other three domains require at least two learning outcomes. Additional learning outcomes are suggested.

First, insert the suitable and measurable learning outcomes required in each of the 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 program learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process.

Code #	NQF Learning Domains And Program Learning Outcomes	Teaching program Strategies	Program Assessment Methods
1.0	Knowledge		
1.0	Summary description of the knowledge to be acquired and on completing this program, students will be able to:  a1. Acquire the major aspects of nature and subject of medical physics and the application of physics to medicine.  a2. Recognize the human body physiology and the application of physical concepts of body cell membranes, bone mechanics, and the principles of laser and its application in medicine.  a3. Describe Bioinformatics in order to	<ul> <li>Demonstrating the basic information and principles through medical training</li> <li>Start each medical training practice by general idea and the benefit of it.</li> <li>Brain storming sessions.</li> </ul>	Quizzes- Oral and written exam
	know how to analysis data which is used to diagnose with the aid of	<ul> <li>Lecturing-interactive discussion.</li> </ul>	
	different medical devices such as gamma camera, utlrasoic imaging and	<ul><li>Self learning</li></ul>	



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X- ray, nuclear magnetic resonance machines. a4. Define different quantitative, mathematical science and physical tools analyze problems and list some foundations of systems theory to solve and analysis different problems. a5. Recognize the nature, properties, dosimetery of radiation and basics of radiation protection and also medical effects of ionizing and non-ionizing radiation. a6. Outline the principles of physics of different medical radiation devices and their modern advances, especially in medical radiation therapy and applications different in medical physics. 2.0 **Cognitive Skills** • *Solving problems.* Summary description of the Cognitive Dialogues and Skills to be acquired and on discussions. completing this program, students will Quizzesbe able to: Lectures Assignments-Looking in the b1. Reorganize mathematical and internet. Exams. physical formulas and demonstrate • Experimental work skills of critical thinking and analytical Report- Oral and its outcomes. reasoning to solve problems in medical presentation. Projects physics and related fields of studies. ■ Workshops Observation**b2.** Interpret the data obtained from Web-based Test-Report. testing, diagnostic instruments such as activities MRI, X-rays, ultrasonic images, CT Analytical reports Individual and images and gamma camera images. Case studies Group Assignments Encourage **b3**. the the Analyze and apply Project report mathematical expressions in evaluating student to look for and understanding of essential facts, the information in concepts, principles and theories of different references.



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Summary description of the Interpersonal Skills, and Responsibility to be acquired and on completing this program students will be able to:  c1. Analyze and evaluate information by using computational tools to interpret experimental data relevant to medical physics by using packages from different theoretical and experimental resources, and perspectives.  c2. Operate some medical instruments such as that used for the diagnosis of different diseases in medical centers and demonstrate competency in laboratory techniques and safety.  c 3. Use scientific literature effectively and prepare technical reports that for individual student or making a group of researchers.  c4. Justify ethical, social and legal responsibilities concerning Medical Physics.		medical physics.  b4. Formulate and test hypotheses using appropriate experimental design and analysis of data (Computer simulation) and integrate IT-based solutions into the user environment effectively.		
	3.0	Summary description of the Interpersonal Skills, and Responsibility to be acquired and on completing this program students will be able to:  c1. Analyze and evaluate information by using computational tools to interpret experimental data relevant to medical physics by using packages from different theoretical and experimental resources, and perspectives.  c2. Operate some medical instruments such as that used for the diagnosis of different diseases in medical centers and demonstrate competency in laboratory techniques and safety.  c 3. Use scientific literature effectively and prepare technical reports that for individual student or making a group of researchers.  c4. Justify ethical, social and legal responsibilities concerning Medical	<ul> <li>Group and</li> <li>interactive discussion.</li> <li>Project- Lab work-</li> <li>field visit-</li> <li>Interactive</li> <li>discussion.</li> <li>Lecture, research</li> <li>activities brain storming</li> </ul>	Assignment-

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	Summary description of the Communication, Information Technology and Numerical Skills to be acquired and on completing this program students will be able to:  d1. Illustrate and employ the processes of scientific inquiry and research methods through use effective information and communications technology (IT) tools and use the basic software, to ensure globally understand of medical physics issues.  d2. Demonstrate scientific concepts and analytical argument, in a clear and organized way, verbally and in writing.  d3. Implement all kinds of relevant information in medical physics through the use of local and internationally accessible libraries, information database, and electronic data and use that information in problem solving activities.  d4. Work independently and demonstrate the ability to manage time and to work as a part of a team, and learn independently with openmindedness to learn how solve the daily life problems.	<ul> <li>Small group         discussion.</li> <li>Small group work         brainstorming.</li> <li>Project- Lab work –         Interactive         discussion.</li> </ul>	<ul> <li>Individual presentation.</li> <li>Group reports.</li> <li>Exams, Individual presentation</li> <li>Group presentation</li> <li>Case studies.</li> <li>Exams, Analytical reports.</li> </ul>
5.0	Psychomotor		
5.1	N/A	N/A	N/A

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#### NQF Learning Outcome Verb, Assessment, and Teaching Strategies and Suggestions

NQF Learning Domains	Suggested Verbs
Knowledge	list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write
Cognitive Skills	estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise
Interpersonal Skills & Responsibility	demonstrate, judge, choose, illustrate, modify, show, use, appraise, evaluate, justify, analyze, question, and write
<b>Communication, Information</b>	demonstrate, calculate, illustrate, interpret, research, question, operate,
Technology, Numerical	appraise, evaluate, assess, and criticize
Psychomotor	Perform, draw, operate, Examine, explore,

Suggested <u>verbs not to use</u> when writing measurable and assessable learning outcomes are as follows:

Consider Maximize Continue Review Ensure Enlarge Understand

Suggested assessment methods and teaching strategies are:

According to research and best practices, multiple and continuous assessment methods are required to verify student learning. Current trends incorporate a wide range of rubric assessment tools; including web-based student performance systems that apply rubrics, benchmarks, KPIs, and analysis. Rubrics are especially helpful for qualitative evaluation. Differentiated assessment strategies include: exams, portfolios, long and short essays, log books, analytical reports, individual and group presentations, posters, journals, case studies, lab manuals, video analysis, group reports, lab reports, debates, speeches, learning logs, peer evaluations, self-evaluations, videos, graphs, dramatic performances, tables, demonstrations, graphic organizers, discussion forums, interviews, learning contracts, antidotal notes, artwork, KWL charts, and concept mapping.

Insert the program learning outcomes, according to the level of instruction, from the above table below and indicate the courses and levels that are required to teach each one; use your program's course numbers across the top and the following level scale. Levels: I = Introduction P = Proficient A = Advanced

	Course Offerings NQF Learning Domains and Learning Outcomes	4041101	4021101	7004101	605101	601101	4031101	4011101	7004102	501101	102101	4032280	4032102	4032121	4041502	4012312	4032293	4032141	4032150	4013331	605201	601201	4012312	4033281
1.0	Knowledge																							
1.1	Acquire the major aspects of nature and subject of medical physics and the application of physics to medicine.	I	I	I	I	P	P	Р	P	P	Р	P	P	Р	p	p	A		A	A	I	I	I	A
1.2	Recognize the human body physiology and the application of physical concepts of body cell membranes, bone mechanics, and the principles of laser and its application in medicine.						P					Р		P	p	p	A			A				A
1.3	Describe Bioinformatics in order to know how to analysis data which is used to diagnose with the aid of different medical devices such as gamma camera, utlrasoic imaging and X- ray, nuclear magnetic resonance machines.						P					P				p		A	A				I	
1.4	Define different quantitative, mathematical science and physical tools analyze problems and list some foundations of systems theory to solve and analysis different						P									p			A					

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	problems.																							
1.5	Recognize the nature, properties, dosimetery of radiation and basics of radiation protection and also medical effects of ionizing and non-ionizing radiation.						P					P				p								
1.6	Outline the principles of physics of different medical radiation devices and their modern advances, especially in medical radiation therapy and different applications in medical physics.						Р									p		A						A
2.0	Cognitive Skills																							
2.1	Reorganize mathematical and physical formulas and demonstrate skills of critical thinking and analytical reasoning to solve problems in medical physics and related fields of studies.	Ι	Ι	Ι	Ι	Р	Р	Р	P	Р	P	Р	Р	Р	p	p	A		A	A	Ι	Ι	Ι	A
2.2	Interpret the data obtained from testing, diagnostic instruments such as MRI, X- rays, ultrasonic images, CT images and gamma camera images.						P					Р		Р	p	p	A			A				A
2.3	Analyze and apply the mathematical expressions in evaluating and understanding						P					P				p		A	A				I	

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	of essential facts, concepts, principles and theories of medical physics.																							
2.4	Formulate and test hypotheses using appropriate experimental design and analysis of data (Computer simulation) and integrate IT-based solutions into the user environment effectively.						Р									p			A					
3.0	Interpersonal Skills & Responsibility																							
3.1	Analyze and evaluate information by using computational tools to interpret experimental data relevant to medical physics by using packages from different theoretical and experimental resources, and perspectives.	Ι	Ι	Ι	Ι	Р	Р	P	P	Р	Р	Р	Р	P	p	p	A		A	A	I	Ι	Ι	A
3.2	Operate some medical instrumentation such as that used for diagnosis of different diseases in medical centers and demonstrate competency in laboratory techniques and safety.						P					P		P	p	p	A			A				A
3.3	Use scientific literature effectively and prepare technical reports that for individual student or making a group of researchers.						P					P				p		A	A				I	
3.4	Justify ethical, social and legal responsibilities concerning						P									p			A					

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	Medical Physics.																							
4.0	Communication, Information Technology, Numerical																							
4.1	Illustrate and employ the processes of scientific inquiry and research methods through use effective information and communications technology (IT) tools and use the basic software, to ensure globally understand of medical physics issues.	I	I	I	I	Р	P	P	Р	Р	Р	Р	P	Р	p	p	A		A	A	I	I	I	A
4.2	Demonstrate scientific concepts and analytical argument, in a clear and organized way, verbally and in writing.						P					P		P	p	p	A			A				A
4.3	Implement all kinds of relevant information in medical physics through the use of local and internationally accessible libraries, information database, and electronic data and use that information in problem solving activities.						Р					Р				p		A	A				I	
4.4	Work independently and demonstrate the ability to manage time and to work as a part of a team, and learn independently with openmindedness to learn how solve the daily life problems.						P									p			A					

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5.0	Psychomotor												
5.1	N/A	·				·							

	Course Offerings  NQF Learning Domains and Learning Outcomes	4033285	4033298	4033145	601301	4033283	4033292	4034170	4033132	4034160	4034291	4034289	4032102	4034286	4034295	4034296	605301	4033285	4033298
1.0	Knowledge																		
1.1	Acquire the major aspects of nature and subject of medical physics and the application of physics to medicine.			A	A	A		A	A	A	A	A			A				A
1.2	Recognize the human body physiology and the application of physical concepts of body cell membranes, bone mechanics, and the principles of laser and its application in medicine.			A					A		A	A			A				
1.3	Describe Bioinformatics in order to know how to analysis data which is used to diagnose with the aid of different medical devices such as gamma camera, ultrasound imaging and X- ray, nuclear magnetic resonance machines.		A					A	A		A	A	A			A	A		
1.4	Define different quantitative, mathematical science and physical tools analyze problems and list some foundations of systems theory to solve and analysis different problems.	A	A						A	A	A	A	A	A	A			A	A
1.5	Recognize the nature, properties, dosimetery of radiation and basics of radiation protection and also medical effects of ionizing and non-ionizing	A	A			A	A		A		A	A	A	A	A	A			A

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	radiation.																		
1.6	Outline the principles of physics of different medical radiation devices and their modern advances, especially in medical radiation therapy and different applications in medical physics.	A	A			A	A		A	A	A	A	A	A	A	A	A	A	A
2.0	Cognitive Skills																		
2.1	Reorganize mathematical and physical formulas and demonstrate skills of critical thinking and analytical reasoning to solve problems in medical physics and related fields of studies.			A	A	A		A	A	A	A	A			A				A
2.2	Interpret the data obtained from testing, diagnostic instruments such as MRI, X-rays, ultrasonic images, CT images and gamma camera images.			A					A		A	A			A				
2.3	Analyze and apply the mathematical expressions in evaluating and understanding of essential facts, concepts, principles and theories of medical physics.		A					A	A		A	A	A			A	A		
2.4	Formulate and test hypotheses using appropriate experimental design and analysis of data (Computer simulation) and integrate IT-based solutions into the user environment effectively.	A	A						A	A	A	A	A	A	A			A	A
3.0	Interpersonal Skills & Responsibility																		
3.1	Analyze and evaluate information by using computational tools to interpret experimental data relevant to medical physics by using packages from different theoretical and experimental resources, and perspectives.			A	A	A		A	A	A	A	A			A				A

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3.2	Operate some medical instruments such as that used for the diagnosis of different diseases in medical centers and demonstrate competency in laboratory techniques and safety.			A					A		A	A			A				
3.3	Use scientific literature effectively and prepare technical reports that for individual student or making a group of researchers.		A					A	A		A	A	A			A	A		
3.4	Justify ethical, social and legal responsibilities concerning Medical Physics.	A	A						A	A	A	A	A	A	A			A	A
4.0	Communication, Information Technology, Numerical	A	A			A	A		A		A	A	A	A	A	A			A
4.1	Illustrate and employ the processes of scientific inquiry and research methods through use effective information and communications technology (IT) tools and use the basic software, to ensure globally understand of medical physics issues.			A	A	A		A	A	A	A	A			A				A
4.2	Demonstrate scientific concepts and analytical argument, in a clear and organized way, verbally and in writing.			A					A		A	A			A				
4.3	Implement all kinds of relevant information in medical physics through the use of local and internationally accessible libraries, information database, and electronic data and use that information in problem solving activities.		A					A	A		A	A	A			A	A		
4.4	Work independently and demonstrate the ability to manage time and to work as a part of a team, and learn independently with openmindedness to learn how solve the daily life problems.	A	A						A	A	A	A	A	A	A			A	A
5.0	Psychomotor																		

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5.1 N/A

#### 5. Admission Requirements for the program

Attach handbook or bulletin description of admission requirements including any course or experience prerequisites.

#### 6. Attendance and Completion Requirements

Attach handbook or bulletin description of requirements for:

- a. Attendance.
- b. Progression from year to year.
- c. Program completion or graduation requirements.

#### E. Regulations for Student Assessment and Verification of Standards

What processes will be used for verifying standards of achievement (eg check marking of sample of tests or assignments? Independent assessment by faculty from another institution) (Processes may vary for different courses or domains of learning.)

- Samples of all kind of assessment are available in the departmental course of each course
- Group marking and group grading is conducted in some courses where the exam paper of each person is graded by more than one instructor.
- Conducting standardized exams.
- Conducting employers surveys exam paper of each person is graded by more than one instructor.

#### F Student Administration and Support

#### 1. Student Academic Counselling

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Describe the arrangements for academic counselling and advising for students, including both scheduling of faculty office hours and advising on program planning, subject selection and career planning (which might be available at college level).

- Each faculty member will be assigned a group of students for counselling and advising. A student will be required to meet his academic advisor at least twice a semester, the first visit being before the registration.
- Each faculty member will be asked to post his office hours during which a student can visit for receiving counselling and advising.

#### 2. Student Appeals

Attach the regulations for student appeals on academic matters, including processes for consideration of those appeals.

#### G. Learning Resources, Facilities and Equipment

1a. What processes are followed by faculty and teaching staff for planning and acquisition of textbooks, reference and other resource material including electronic and web based resources?

The requirements of textbook and other materials for teaching are identified by the instructor teaching the course. The instructor's suggestions are reviewed by the Undergraduate Committee, who may seek the opinion of the other faculty members. The instructor, proposing the textbook for a course, is asked to review at least two textbooks on the subject and submit justifications for the chosen text book.

1b. What processes are followed by faculty and teaching staff for planning and acquisition resources for library, laboratories, and classrooms.

The department requests the Purchasing department to procure the textbooks selected by the department.

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2. What processes are followed by faculty and teaching staff for evaluating the adequacy of textbooks, reference and other resource provisions?

It is the responsibility of the undergraduate committee formed by the department to valuate the adequacy of text books, and reference materials for each course. The undergraduate committee ensures that the books are current and contents most of the topics covered in the syllabuses.

- 3. What processes are followed by students in evaluating the adequacy of textbooks, reference and other resource provisions?
- 4. What processes are followed for textbook acquisition and approval?

#### H. Faculty and other Teaching Staff

#### 1. Appointments

Summarize the process of employment of new faculty and teaching staff to ensure that they are appropriately qualified and experienced for their teaching responsibilities.

The department has an established process for recruiting new faculty members in the areas needed. The positions are advertised with the specific requirements of qualification and experience. The department has the policy not to offer a professorial rank to instructors without a doctoral degree in the discipline. Qualifications are verified before appointments are made.

#### 2. Participation in Program Planning, Monitoring and Review

- a. Explain the process for consultation with and involvement of teaching staff in monitoring program quality, annual review and planning for improvement.
  - The department conducts its affairs through a number of standing committees in the department, each committee is entrusted with some duties and responsibilities.
  - The quality of program is reviewed by the Program Assessment Committee.
  - The Undergraduate Committee looks after the undergraduate curriculum, and makes changes as and when necessary to main the currency of the program.
  - All faculty members are distributed in the standing committees, so that all participate in the academic affairs of the department.
  - All decisions of the department are discussed in the Department Council meeting for approval of the department.

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b. Explain the process of the Advisory Committee (if applicable)

#### 3. Professional; Development

What arrangements are made for professional development of faculty and teaching staff for:

a. Improvement of skills in teaching and student assessment?

The Academic Development Unit of the University holds periodically workshops on effective teaching, education technology, and better learning environment and on similar topic for the professional development of the faculty.

b. Other professional development, including knowledge of research and developments in their field of teaching specialty?

Through seminars and lectures/talks delivered by the invited experts from the academia and universities.

Through conference attendance for which the University provides the support.

Through international collaboration with other universities and research centres

#### 4. Preparation of New Faculty and Teaching Staff

Describe the process used for orientation and induction of new, visiting or part time teaching staff to ensure full understanding of the program and the role of the course(s) they teach as components within it.

A new faculty member will be given a copy of the Faculty Handbook that contains all information about the duties and responsibilities of the faculty, including the rights, privileges and code of conduct. For the first two semesters, he will be assigned multi-section courses which are co-ordinated and courses that are within his area of specialty. If necessary and desired, he will be assigned an experienced senior faculty member for receiving teaching help. His students evaluation will be closely monitored to see that there is no problem with his teaching. He will be asked to attend the workshops on effective teaching and professional development conducted by the Academic Development Unit of the University.

#### 5. Part Time and Visiting Faculty and Teaching Staff

Provide a summary of Program/Department/College/institution policy on appointment of part time and visiting teaching staff. (i.e. Approvals required, selection process, a proportion to the total teaching staff, etc.)

The department, for the time being, relies fully on the full time faculty member. There is no plan to hire part time faculty members, other than those who are invited from the other universities to deliver some lectures in some courses.

#### I. Program Evaluation and Improvement Processes

#### 1. Effectiveness of Teaching

- a. What processes are used to evaluate and improve the strategies for developing learning outcomes in the different domains of learning? (e.g., assessment of learning achieved, advice on consistency with learning theory for different types of learning, assessment of understanding and skill of teaching staff in using different strategies)
- (i) from current students and graduates of the program?
  - graduating students surveys and interviews.
  - Alumni surveys.
  - Establishing an internet open forum to get student feedback.
- (ii) from independent advisors and/or evaluator(s)?
  - self-assessment report reviewed by external experts.
  - professional chemical societies assessment.

### b. What processes are used for evaluating the skills of faculty and teaching staff in using the planned strategies?

Faculty's skills will be evaluated through observation of their performance, expertise, student's evaluation and their own interests. When necessary, a faculty member is trained to perform a special function through seminars and workshops

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2. Overall Program Evaluation

### a. What strategies are used in the program for obtaining assessments of the overall quality of the program and achievement of its intended learning outcomes:

#### (i) From current students and graduates of the program?

- The entry-level students will be administered a locally developed skill-testing test to measure the level of skill and knowledge.
- The graduates will be tested through a locally developed exit exam to measure of the level of attainment of the learning outcomes.
- An exit interview with the graduates will be carried out to receive feedback on the program and their learning experience. The department will note their concerns and suggestions for the improvement of the program and the method of teaching and learning.
- During the course, students provide feedback to the lecturer via course questionnaires. Questionnaire summaries are discussed each term on the staff, student consultative committee providing additional student feedback. At the end of each physics course the lecturer completes a pro-forma report, including a summary of student questionnaire responses.

#### (ii) From independent advisors and/or evaluator(s)?

Peer review, appraising progress and identifying changes that need to be made. The reports are discussed at theme group meetings who monitor the quality of module delivery and syllabus related issues across groups of related modules forming subject themes.

Every three- year, a team of independent evaluators will be invited to evaluate the program on the basis of an on-site visit for which the course files of all courses that will also contain the samples of best and worst student work will be made available. Such an assessment may require inspection of laboratories, equipment, classrooms and interviews with faculty, staff and students for a comprehensive evaluation of the program, facilities and the learning environment. The findings and recommendations of the evaluating team will be used for the improvement of the program.

#### (iii) From employers and/or other stakeholders.

Beginning with the fifth year of the commencement of this new program, every two-year interval a comprehensive survey of the employers and alumni will be carried out to collect data and information on the attainment of the program's educational objectives and outcomes. Additionally, face-to-face exit interviews will be conducted with the graduating students to receive feedback on the program, delivery, learning experience and outcomes.

### b. What key performance indicators will be used to monitor and report annually on the quality of the program?

- Average score on an overall program quality item on a student survey on completion of the program (50% response rate required)
- Completion rate for students in first year of the program.

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- Proportion of students who complete the full program in minimum time.
- Proportion of students (available for employment) who are employed within six months of graduation.
- Proportion of full time faculty who completed training programs in teaching or attended conferences during the year.
- Number of refereed journal, book or monograph publications during the year per full time faculty member.

## c. What processes will be followed for reviewing these assessments and planning action to improve the program?

The department will form a standing committee known as Program Assessment Committee (PAC), which will be entrusted with the primary duty of administering every two-years a self-assessment of the program, and to evaluate the findings of this evaluation, the surveys of the employers, alumni, faculty, and the input of the exit interviews with the graduating students. Additionally, PAC will also review the assessment of the external evaluators to propose actions to be taken for the improvement of the program.

PAC will propose the recommended actions to the department chair for the improvement of the program.

It is departmental practice that lecturers on all but specialist courses should be changed regularly so that lecture courses are constantly refreshed, and the detailed content of lectures regularly reviewed and up-dated. Good practice is identified and shared via teaching and learning committee, the subject theme groups and at the annual courses review meeting. Teaching material.

#### Attachments.

- 1. Copies of regulations and other documents referred to in template preceded by a table of contents.
- 2. Course specifications for all courses.

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#### **Program Action Plan Table**

Directions: Based on your "Analysis of KPIs and Benchmarks" provided in the above Program KPI and Assessment Table, list the recommendations identified below.

No.	Recommendations	Action Points	Assessment Criteria	Responsible Person	Start Date	Completion Date
1						
2						
3						
4						
5						
6	N. A. I. i. divid		1	•		A (' DI )

Action Plan Analysis (List the strengths and recommendations for improvement of the Program Action Plan).

#### **Authorized Signatures**

Dean / Program Chair	Name	Title	Signature	Date
Program Dean or Chair of Board of Trustees Main Campus	Dr. Hatem Muhmad Altass	Associate professor		
Vice Rector	Dr. Fahd Al-Hashmi	Associate professor		

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### **Level One**

English Language (1) 700140-4

Calculus 4041101-4

Islamic Culture (1) 601101-2

The Holy Qur'aan (1) 605101-2

General Chemistry (1) 4021101-4

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ATTACHMENT 2 (e)

**Course Specifications** 

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

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**Course Specifications** 

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment Course Specifications (Calculus 1 4041011-4)

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المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **COURSE SPECIFICATIONS**

Institution Umm Al-Qura Unive	ersity									
College/Department Faculty of Applied Science/ Department of Mathematical Science										
Course Identification and General Information										
1. Course title and code: <b>Calculus(I)</b> (4041011-4)										
2. Credit hours 4 Hours										
Program(s) in which the course is offered.										
	thematics									
(If general elective available in many programs indicated)										
4. Name of faculty member responsible for the cours										
5. Level/year at which this course is offered First y	ear/first semester									
6. Pre-requisites for this course (if any) Non										
7. Co-requisites for this course (if any)										
8. Location if not on main campus Al-Abdia Campu	ıs									
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?									
T 014 4										
B Objectives										
What is the main purpose for this course?										
	By the end of the course the students will be able to									
use the concepts of introductory calculus	amodical tarms									
-have concise and authoritative definitions of math	ematical terms									
-solve linear equations and inequalities -solve quadratic equations and inequalities										
-solve quadratic equations and mequanties -evaluate the limit of functions.										
-find derivatives of functions using theorems and i	ales									
-extend the concept of limits to infinity.	uics.									
-differentiate implicit and explicit functions.										
-study a function :where it goes, how it evolves, st	udving its monotonicity and critical points.									
concavity and inflexion points	and mg are anonotomore, and errored points,									
-integrate functions										
Briefly describe any plans for developing and improv	ing 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)										
Encouraging students to collect problems from web b	ased reference material and supervise classroom									
discussions.										
Update references used in teaching process.										
Use e-learning facilities more efficiently.										
Use computer packages for solving exercise										

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

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List of Topics	No. of	Contact Hours
	Weeks	
Real numbers, Exponents and Radicals, Polynomials: Basic Operations		
and Factoring . Solving Equations, Rational Expressions: Basic	2	8
Operations, Inequalities, Absolute Values.		
Definition of Functions(Domain and Range), Graphs of Functions,	2	8
Operations on Functions, Trigonometric Functions and Identities	2	o
Introduction to Limits, Theorems on limits, Limit from Right and from	2	8
Left, Definition of Continuity	Δ	O
<b>Definition of Derivative (Using Limits), Rules and Theorems for Finding</b>		
Derivatives, Derivative of Trigonometric Functions, Chain Rule, Higher	2	8
Order Derivatives, Implicit Differentiation		
Maxima and Minimam, Monotonicity, Local Maxima and Minimam,	2	8
Concavity, Sketching the Graphs	2	o
Integration of Functions, Definite Integrals	2	8
Revision	1	4
Total	13	52

Course Units/Credit Hours	I	Lecture: 4 credit h	nours
		Contact hours	Private study
	Lecture	60	115
	Assignments	2	10
Student workload	Practical	0	0
	Exams & Quizzes	8	20
	Sum	70	145
	Total Sum		215
Credits	7 ECTS C.Ps		

2. Course con	nponents	s (total co	ontact hours	and credit	s per semester):							
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total						
Contact Hours	60	0	0	0	8	68						
Credit 4 0 0 0 0 4												
3. Additional private study/learning hours expected of students per week. 9.67												

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

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#### **Academic Accreditation & Assessment**

1.0	And Course Learning Outcomes	Teaching Strategies	Course Assessment Methods
1.0	Kn	owledge	
1 1	Define the related basic scientific facts, concepts, principles and techniques calculus	Lectures Tutorials	Exams
	Recognize the relevant theories and their applications in basic mathematics.	Discussion Problem Solving	Home work.
2.0	Cogn	itive Skills	
2.1	Representing problems mathematically.	Lectures Tutorials	Exams Quizzes.
	How to distinguish different rules in calculus.	Solve Problem Brain Storming	Homework. Discussion
3.0	Interpersonal Si	kills & Respons	ibility
3.1	Develop connections of calculus with other disciplines	Cooperative	Home work.
	Solve problems using a range of formats and approaches in basic science	education Competitive	Reports. Quizzes.
4 /	show the ability to work independently and within groups.	education	Discussion
4.0	Communication, Inform	ation Technolo	gy, Numerical
	Learn how to summarize lectures or to collect materials of the course.	Lectures	Home work.
4.2	Learn how to solve difficulties in learning: solving problems – enhance educational skills	tutorials	Reports. Discussion
5.0	Psyc Not applica	chomotor	

5. Schedu	5. Schedule of Assessment Tasks for Students During the Semester					
No.	Proportion of Final Assessment					
1	Midterm 1	6 <sup>th</sup> week	20 %			
2	Midterm 2	12 <sup>th</sup> week	20%			
3	Homework + reports + Quizzes	During semester	10%			
4	Final exam	End of semester	50 %			

#### **D. Student Academic Counseling and Support**

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)

Office hours per week in the lecturer schedule (6 hours per week).

2- Contact with students by e-mail, SMS, and e-learning facilities.

#### **E.** Learning Resources

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Required Text(s)
Mathematics for preparatory year program, Book1, Oxford University Press,2013
Essential References
Calculus (Ninth Edition)by Dale Varberg, Edwin Purcell and Steven Rigdon
Recommended Books and Reference Material (Journals, Reports, etc) (Attach List):
4.Electronic Materials, Web Sites etc
http://en.wikipedia.org/wiki/Calculus
5. Other learning material such as computer-based programs/CD, professional
standards/regulations:Maple
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.)
Accommodation (Lecture rooms, laboratories, etc.)
-Classroom with capacity of 25-students.
- Library.
2. Computing resources:  Not available
3. Other resources (specifyeg. 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:
Student feedback through electronic facilities organized by the deanship of registration and acceptance.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department
Evaluation of the teachers by internal & external faculty members.
Visiting to the classrooms.
Mutual visits between colleagues and giving advices to each other after each lecture
3 Processes for Improvement of Teaching
Analysis of student course evaluation and feedback
Peer evaluation and feedback
Review of course portfolios
Workshops on pedagogical methods
Processes for Verifying Standards of Student Achievement (eg. 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)
Analysis of course assessments by other reviewers on a periodic basis.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning
for improvement.
Material and learning outcomes are periodically reviewed internally and externally.
Comparing course content and teaching methodologies with similar courses offered at other departments
and universities.
Studying the outcomes of the students' evaluations of the course and use it to improve teaching strategies.
Faculty or Teaching Staff:
Signature: Date Report Completed:
Received by: Dean/Department Head
Signature: Date
The state of the s

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Course: Islamic Culture (1) Code: 601101-2



توصيف مقرر: الثقافة الاسلامية ١٠١

أ)التعريف بالقرر الدراسي ومعلومات عامة عنه :

سم المقرر: الثقافة الاسلامية	رمزه: ۲۰۱۱۰۱
عدد الساعات المتعدة: (٢)	
البرامج الذي يقدم فيها المقرر: إجباري لطلا	لطلاب السنة الاولى في جميع كليات الجامعة .
اسم عضو هيئة التدريس المسئول عن المقرر اا	ر الدراسي: أحد أعضاء هيئة التدريس
السنة أو المستوى الأكاديمي الذي يعطى فيه	فيه المقرر الدراسي: المستوى الأول
المتطلبات السابقة لهذا المقرر: لا يوجد.	
المتطلبات الآنية لهذا المقرر: لا يوجد	
موقع تقديم المقرر: داخل المبنى الرئيس للج	للجامعة في شطري الطلاب والطالبات.
21. 41.	

#### ب) الأهداف:

- ١- نتائج التعلم الأساسية للطلبة المسجلين في المقرر:
- تعریف الطالب بالثقافة الاسلامیة ومصادرها وخصائصها.
  - تعريف الطالب بآداب وسمات طالب العلم .
- المام 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:

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

#### ج) توصيف المقرر الدراسى:

		١ – الموضوعات التي يتناولها المقرر:
ساء ات التدريس	عدد الأسابيع	قائمة الموضوعات
7	Y	- مدخل لدراسة الثقافة الإسلامية (ص ١٠ – ٢٥)
۲	1	- مقدمات في دراسة العقيدة (ص٢٦-٤٩)
۲	Y	(الإيمان بوجود الله تعالى _ توحيد الربوبية ) (ص٥٠- ٦١ )
۲	1	- ( توحيد الألوهية _ توحيد الأسماء والصفات ) (ص٦١-٧٢)
۲	,	- الإيمان بالملائكة والكتب (ص٧٣-٩٠)
۲	Y	- الإيمان بالرسل عليهم السلام (ص٩١-١٠٨)
Υ.	Λ.	- الإيمان باليوم الآخر (١) (ص١٠٩–١٢١)
۲	Y	- الإيمان باليوم الآخر (٢) (ص١٢٢–١٣٦)
Y	1	-
*	Y	- العبادة في الإسلام (١) (ص١٤٨-١٥٧)
Υ.	Y	- العبادة في الإسلام (٢) (ص١٥٨-١٦٥)
۲	1	- الأخلاق في الإسلام (١) (ص١٦٦–١٨٥)

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٤	۲	( 4.	- الأخلاق في الإسلام (٢) (ص١٨٥-٦
£ :	اختبارات	مادة الدرس: ۲۸	المحاضرة: ٣٢
			٣- ساعات دراسة خاصة إضافية:
د سالم)،	د. محمد رشاه	ين أسبوعيًا من كتاب مدخل إلى الثقافة الإسلامي	<ul> <li>قراءة ثقافية تخصصية لمدة ساعة إلى ساعتي</li> </ul>
، ب	, خدمت الكتاب	صل الطالب إلى الفهم دون الرجوع إلى الكتب الت	وينصح بالقراءة مرة ومرتين وثلاثة حتى يم
		دت.	ويتواصل مع الأستاذ للاستفسارات إن وجد
			تطوير نتائج التعلم في مختلف مجالات التعلم:
		ا : أن يكون الطالب قادرا على أن:	المعارف: توصيف للمعارف المراد اكتسابها
		صها.	<ul> <li>يعرف الثقافة الاسلامية ومصادرها وخصائد</li> </ul>
			● يلم بآداب وسمات طالب العلم .
		الفرد والمجتمع .	<ul> <li>يعرف مفهوم العقيدة واهميتها وآثارها على</li> </ul>
			<ul> <li>يتعلم أصول العقيدة الاسلامية .</li> </ul>
سلم .	انية في حياة الم	نتها وشروطها وخصائصها وآثارها التربوية والإي	<ul> <li>يعرف مفهوم العبادة في الاسلام وبيان مكان</li> </ul>
منها.	با وتقديم نماذج	, اسسسها ومصادرها وخصائصها ووسائل اكتساء	<ul> <li>يقف على مفهوم الاخلاق في الاسلام وبيان</li> </ul>
		لتزام بها.	<ul> <li>يعرف الوصايا والقواعد الأخلاقية بغية الاا</li> </ul>
		نلك المعارف:	١- استراتيجيات التدريس المستخدمة لتنمية ت
		(1	<ul> <li>٢- من خلال القراءة في الكتاب المقرر، (الثقافة</li> </ul>
			٣- الإلقاء، وفتح الحوار والمناقشة،
		إلى الثقافة الإسلامية د. محمد رشاد سالم)،	٤- ومن خلال القراءة الذاتية في كتاب مدخل
			<ul> <li>طرق تقويم المعارف المكتسبة:</li> </ul>

من خلال الاختبارات التحريرية المباشرة.

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#### 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.
      - ۲- طرق تقويم المهارات الإدراكية لدى الطلاب:
      - تقويم الإسهات 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.
  - 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

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المملكة العربية السعودية الهيئة الوطنية الوطنية والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

1.01.1.1.1	1 2 .127.	التماما	1 . 1	

- 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:

نسبته	الأسبوع	مهمة التقويم (كتابة مقال، اختبار، مشروع جماعي،	التقويم
من التقويد النهائي	المحدد له	اختبار نهائيالخ)	
% <b>Y・</b>	الثامن	اختبار نصفي لقياس المعارف والمهارات	١
<b>%</b> Υ•	جميع الأسابيع	التدريب العملي علي البحث العلي والمكتبات.	۲
%.4.	يحدد عن طريق الجامعة	النهائي.	۴

#### د. الدعم الطلابي:

١ – الإرشاد المكتبي: يوم الاثنين المحاضرة الخامسة بالمكتب:

٢- التواصل الدائم: البريد الالكتروني:

#### ه. مصادر التعلم:

افة المقرر ١٠١	لوبة: كتاب الثة	١- الكتب المقررة المطا
----------------	-----------------	------------------------

٢- المراجع الرئيسة:

د. عمر الأشقر

٣- نحو ثقافة إسلامية أصيلة

د. عبد الكريم عثمان

٤- معالم الثقافة الإسلامية

. 7

نظرات في الثقافة الإسلامية

عز الدين التميمي الخطيب وآخرين

د. محمد رشاد سالم.

٦- مدخل إلى الثقافة الإسلامية

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ز محاسنه د. سليمان بن عبد الله أبا الخيل.	مصادر الدين الإسلامي وأبر	_Y
للقرضاوي	العبادة في الإسلام	_٨
للشيخ عبد الرحمن حبنكة الميداني .	الأخلاق الاسلامية	_9
محمد الغزالي	- خلق المسلم	١.
ي يوصى بها (المجلات العلمية، التقارير،الخ) (أرفق قائمة بها)	الكتب و المراجع الت	
د. محمد محمد حسین	الإسلام والحضارة الغربية	-
ع على الغرب د. زيغريد هونكه .	شمس العرب ( الله ) تستط	-
ز محاسنه د. سليمان بن عبد الله أبا الخيل	مصادر الدين الإسلامي وأبر	-
الإنترنتالخ:	المراجع الإلكترونية، مواقع	٤ -
: مواقع المكتبات .	<ul> <li>المواقع الالكترونية</li> </ul>	
لك فيصل	– موقع مركز الم	
	– موقع المكتبة الشاملة	
	تعليمية حاسوبية:	مواد
و المكتبة الشاملة.	برنامج التراث الإسلامي، أ	-
الالكترونية على موقع مكتبة جامعة أم القرى.	البحث في مصادر المعلومات	-
الالكترونية.	البحث في محركات البحث	_

#### 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

- 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.
      - ۳- عمليات تطوير التدريس :
- التواصل الدائم مع المواقع التربوية واقتناص التجارب المفيدة والآراء في طرق التدريس والتقويم.

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# المرتق ا

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- 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.
- صف إجراءات التخطيط للمراجعة الدورية لدى 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 ولى التوفيق

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المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

Course Units/Credit Hours	Lecture: 2 credit hours			
		<b>Contact hours</b>	Private study	
	Lecture	30	32	
G. 1	Assignments	0	12	
Student workload	Practical	0	0	
	Exams & Quizzes	4	12	
	Sum	34	56	
	Total Sum	9(	)	
Credits	3 ECTS C.Ps			

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total
Contact Hours	30	0	0	0	4	34
Credit	2	0	0	0	0	2
3. Additional private study/learning hours expected of students per week.  3.73						

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الـــرقـــم: ......



المملكة العربية السعودية الهيئة الوطنية الوطنية والاعتماد الأكاديمي

Code: 605101-2

Course: The Holy Our'aan (1)

المحلكة العربية السعودية وزارة التعليم العالي حامعة أم القري كلية الدعوة وأصول الدين

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 المعارض 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 ١٣٨٤٥ه فاكس : ٨٨٨٨٨هه

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الــرقــم: ...... الــتــاريخ: ..... المشفوعات: .....



المملكة العربية السعودية وزارة التعليم العالم جامعة أم القري كلية الدعوة وأصول الدين

#### المرجع:

البرهان في تجويد القرآن ، للشيخ / محمد الصادق قمحاوي .

#### المراجع الأخرى:

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

#### رابعاً:المفظ:

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

Tel: 5563845 Fax: 5583888 كلية الدعوة وأصول الدين مكة المكرمة ص . ب : ٧٠٤٠ تليفون ١٣٨٤٥ه فاكس : ٨٣٨٨٨ه

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Course Units/Credit Hours	Lecti	ure: 2 credit hours	
		<b>Contact hours</b>	Private study
	Lecture	30	51
Student workload	Assignments	0	15
	Practical	0	0
	Exams & Quizzes	4	20
	Sum	34	51
	Total Sum	12	0
Credits		4 ECTS C.Ps	

2. Course com	ponents (tota	al contact h	ours and credit	s per semeste	r):	
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
			or Studio		(Exams,	
					Assignments and	
					Quizzes)	
Contact Hours	30	0	0	0	4	34
Credit	2	0	0	0	0	2
3. Additional pr	rivate study/	learning ho	urs expected of	f students per	r week. 3.73	

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المملكة العربية السعودية الهيئة الوطنية الوطنية الوطنية التقويم والاعتماد الأكاديمي

**Academic Accreditation & Assessment** 

ATTACHMENT 2 (e)

**Course Specifications** 

#### **Kingdom of Saudi Arabia**

The National Commission for Academic Accreditation & Assessment

**COURSE SPECIFICATION** 

# General Chemistry 1 4021101-4

#### **National Commission for**

#### Academic Accreditation & Assessment



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Course Specifications**

Institution: Umm Al-qura University Date of Report: 2017

College/Department : Faculty of Applied Science/ department of chemistry

#### A. Course Identification and General Information

- 1. Course title and code: General Chemistry 1, 4021101-4
- **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: 1<sup>st</sup> / 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).

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- 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	Contact
	Weeks	hours
Units of measurements; SI- units, intensive and extensive properties, uncertainty	1	3
in measurements (precision and accuracy).		
Significant figures: Rounding significant figures, Using significant figures in	1	3
addition, subtraction, multiplication and divisions.		
States of matter and measurement, molecules and molecular compounds.	2	6
The periodic table, nomenclature, electronic structure of atoms, simple periodic	2	6
properties of the elements.		
Chemical bonding, molecular geometry, and properties of various states of	1	3
matter.		
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

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# المستقالية التقوير المتعادية التقوير المتعادية التقوير المتعادية التقوير المتعادية ال

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#### **Laboratory Experiments Outline**

Topics to be Covered		
List of Experiments	No of	Contact
The practical part includes the following experiments:	Weeks	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

Course Units/Credit Hours	I	Lecture: 4 credit hou	rs
		Contact hours	Private study
	Lecture	45	68
	Assignments	0	15
Student workload	Practical	42	42
Student workload	Exams & Quizzes	8	20
	Sum	95	145
	Total Sum	2	240
Credits		8 ECTS C.Ps	

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## المملكة العربية السعودية الهيئية الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
			or Studio		( Exams & Quizzes)	
Contact	45	0	0	42	10	97
Hours						
Credit	3	0	0	1	0	4

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	Course Teaching	Course Assessment
	And Course Learning Outcomes	Strategies	Methods
1.0			
1.1	Knows International system of units	Lectures	Exams
1.2	Familiar with the laws that describe the behavior of ideal	Scientific discussion	portfolios
	gases.	Library visits	long and short essays
1.3	Knows atom structure	Web-based study	posters lab manuals
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			
2.0	Cognitive Skills		
2.1	Summarize gases laws	Lectures	1. Midterm exam
2.2	Compare between ideal and real gases	Scientific discussion	2.quizzes
2.3	Apply Hess's law for the calculation of heat of reaction.	homework assignment	3.Final exam
2.4	Apply Faraday's laws for calculating the amount	containing problem thinking	

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

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Mark	S		100%



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#### **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, 10<sup>th</sup> ed., 2006, New York.
- 2. Essential References

Steven S. Zumdahl, Susan A. Zumdahl, 9<sup>th</sup> ed., 2009, New York.

- 3. Recommended Books and Reference Material (Journals, Reports, etc) (Attach List) Chemistry, R. Chang, 10<sup>th</sup> 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 thequestionnaire 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.

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والاعتصاد الأكباديم

المملكة العربية السعودية

**Academic Accreditation & Assessment** 

- 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.

**Professor Mohamed Awad** 

• Consult other staff of the course.

Faculty or Teaching Staff:

- Hosting a visiting staff to evaluate of the course.
- Workshops for teachers of the course.

Signature:	Date Report Completed: 201		
Received by: Dr. Ismail Althagafi	Department Head		
Signature:	Date:		

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المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Course Specifications**

**Umm Al-Qura University** 

**English Language Center** 

**English Language for Students of the Department of Physics** 

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المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### Introduction

The following is a detailed description of the *English Language I* (7001401 - 4) course offered by the English Language Center (ELC) to all freshmen joining the College of Applied Sciences at Umm al Qura University (UQU).

All students are considered at the same proficiency level and receive the same number of contact hours per week i.e. ten hours per week. The students are expected to reach the beginning of elementary level in English where they are able to take the consequent ESP course aiming at their specific area of specialism. See below for more details.

#### 1. Basic Information

1.	Course Title:	English Language I
2.	Course Number:	7001401 - 4
3.	Course Type:	Required
4.	Number of Credits:	4
5.	Number of Contact Hours:	Ten hours a week (160 hours per semester)
6.	Course Pre-requisites:	Admittance to the College of Applied Sciences (BA level)
7.	Course Time:	First Year 1 <sup>st</sup> Semester (16 weeks including Mid & Final Exams)

#### 2. Course Catalog Description

English Language I (7001401 – 4) is a single-level, English for General Purposes (EGP) course. All students who are admitted to the College of Applied Sciences (BA program) are required to take this course in the first semester of the first year of their program. The course is offered in 16 weeks with a 10-hour-per-week teaching plan covering

English Language I (7001401 – 4) intends to develop students' knowledge and ability of English language in all major skills which include reading, writing, listening, and speaking, as well as in

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sub-skills including grammar, vocabulary, and pronunciation. The course aims at preparing the students to advance their English to the English for Specific Purposes (ESP) level which is specialism specific and is offered in the second semester. All students are required to successfully complete the English Language course before admission to their specialism related ESP course offered by the ELC.

#### 3. English Language I (7001401 – 4): Specific Schemes

#### 3.1. Course Delivery

Coverage of Planned Program

Weekly Instruction: 10 contact hours; Total: Semester Instruction: 160 contact hours.

Number of Textbooks: one as follows:

Milestones in English: Student's Book with Online Skills A1

Week No.	Unit/Topic Covered	Contact hours
	Course intro & orientation.	
Week 1		10
	A1 (Unit 1)	
Week 2	A1 (Unit 1& Unit 2)	10
Week 3	A1 (Unit 2)	10
Week 4	A1 (Unit 3)	10
Week 5	A1 (Unit 3 & Unit 4)	10
Week 6	A1 ( Unit 4)	10
Week 7	A1 (Unit 5)	10
Week 8	A1 (Unit 5 & Unit 6)	10

Week 8: Unit 6 &

#### Midterm Exam

Week 9	A1 (Unit 7)	10
Week 10	A1 (Unit 7 & Unit 8)	10
Week 11	A1 (Unit 8)	10
Week 12	A1 (Unit 9)	10
Week 13	A1 Unit 9 & Unit 10	10
Week 14	A1 (Unit 10	10
Week 15	Review	10

Week 16: Wednesday & Thursday: Final Exam

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#### 4. English Language I(7001401-4): General Schemes

#### 4.1. General and/or Professional Performance Standards

General and/or Professional performance domains and sub-domains that **English Language I** (7001401 - 4) fully or partially covers are checked below.

	Vocabulary	
	Grammar	
	Pronunciation	
Language Proficiency skills	Listening	
	Speaking	
	Reading	
	Writing	
	Managing	
<b>Educational Instructional Skills</b>	Testing	
	Evaluating	
Knowledge of Linguistics		
Literature		
	L1 Culture	
Culture	L2 Culture	
	Other Cultures	

#### 4.2 English Language I (7001401 – 4): Competencies Development

The following competencies are developed in *English Language I (700140 1- 4)*:

- 1. Competency in reading
- 2. Competency in listening
- 3. Competency in speaking
- 4. Competency in writing
- 5. Competency in grammar
- 6. Competency in vocabulary

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## المناه الوطاية التقوير المناه الوطاية التقوير والإغتمام الإنقامية

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- 7. Competency in pronunciation
- 4.3. English Language I (7001401 4) Course Instructional Objectives

#### English Language I (7001401 - 4) aims at:

- 1. revising and expanding students' grammatical structures.
- 2. revising and expanding students' lexicon.
- 3. developing students' skills in accuracy and fluency.
- 4. developing students' basic skills in word pronunciation, word stress, rhyme, and intonation.
- 5. enhancing students' basic skills in listening for gist and specific information.
- 6. improving students' basic ability in verbal communication and social interaction.
- 9. developing students' basic reading comprehension skills.
- 10. developing students' skills in the use of cohesive devices and basic sentence structures in developing a short paragraph.
- 12. enhancing students' language proficiency in all skills interactively.
- 13. building students' confidence and motivation through exposure to the integration of four language skills.
- 14. preparing students to sit for assessments and evaluation to check their progress and achievement in learning the English language.

#### 4. 4. *English Language I (7001401 – 4)* Performance Objectives

By the end of the course, the students are expected to be able to:

- 1. express themselves in everyday situations.
- 2. communicate via listening, speaking, and very basic writing.
- 3. differentiate between the correct usage and incorrect usage of English in grammar and vocabulary.

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# العينة الوطنية التقوير العينة التقوير التقوي

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- 4. use the lexicon and structures acquired through basic social and communicative activities.
- 5. compare and contrast Culture 1 and Culture 2 as well as L1 and L2 in a given text.
- 6. write a short paragraph and organize their thoughts coherently and cohesively.
- 7. have confidence in sitting for assessment and evaluation.

#### 4.5. Additional Points to Class and Course Management Policies

To maximize the language learning opportunities to the students and to provide them with the smoothest possible experience throughout the time the students are under its care, the ELC has developed certain in-home bodies and policies. The following is an account of them:

#### 4.5.1. Exam Committee (EC)

The Exam Committee at the English Language Centre (ELC) organizes and coordinates all mid-term and final exams; they also develop exam questions, answer keys, and marking guidelines, in addition to supervising the execution of the exam rules and regulations. Faculty and students can turn to the committee if they have a question or concern regarding an exam, a missed exam, etc.

#### 4.5.2. Marking Committee (MC)

Once the Exam Committee has delivered an exam, the answer sheets are forwarded to the Marking Committee which marks the students' answer sheets using a computer program. To make sure that the answer sheets are marked correctly, the MC randomly chooses 5 sheets from each group and score them manually. They cross-match the results and if any discrepancies are found, the whole group is rechecked.

#### 4.5.3. Classroom Rules of Conduct

#### **Students:**

- 1. are not allowed to use electronic devices, such as mobile phones, tablets, audio recorders, in the classroom unless needed or requested by the teacher and for academic purposes.
- 2. are not given an opportunity to use a camera inside and outside the classroom, unless they have the proper permissions and for academic reasons.
- 3. are not permitted to drink beverages and eat food, snacks, candies, and the like in the classroom.
- 4. are allowed to drink water in the classroom.
- 5. are not allowed to disturb the class by any means.
- 6. are to observe the Islamic code of dress.

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7. are not allowed to smoke in class or on university premises.

#### 4.5.4. Attendance and Participation

Students' attendance at all class sessions is required. Simply, learning English is a skill which needs focus, practice, and regular attendance. Additionally, students' punctual attendance shows their enthusiasm for learning as well as respect for the teacher, peers, course, and the University. Any absence beyond 25% of the Course Hours will result in the student's being banned from attending the final exam.

Students need to differentiate between an 'excused' and 'non-excused' absence. Any absence which occurs due to a health condition, a personal/family emergency, or attendance at an approved university activity is considered an excused absence. The excused absence must be supported by documentation and presented to the instructor in advance, or immediately, or shortly after the student's availability in the class. The absent student is responsible for any assignment, quiz, and/or exam missed whether their absence is excused or unexcused. Having an excuse will not reduce the number of absent hours counted, but it will give the student a chance to catch up on missed assignments and quizzes, if the course instructor accepts.

Students are not turned away from entering the classroom when they are late. However, it is expected that they enter the classroom calmly, positively, and non-disruptively. Without a doubt, 'participation marks' are largely affected by excessive tardiness and absenteeism. Students' regular attendance and participation in the class not only do strengthen their academic backups but also do support their participation marks, among others.

#### 4.5.5. Missed Exams

If a student misses a quiz, an assignment, and/or a presentation, they have to contact their instructor at the earliest opportunity possible in order to arrange for an alternative.

If a student misses a unified exam (a midterm exam or a final exam) because of a medical reason or a personal/family distress, s/he has to contact the Vice-Dean for Academic Affairs of their respective college and submit a written document such as a medical report issued by an authorized medical body or personality within two weeks. The Vice-Dean will file the case and forward the relevant documents to the English Language Center. The ELC Director or one of his deputies will send the case to the Exam-Excuses Committee in the ELC. Accordingly, the committee will review their case and decide if the student is eligible to sit for a substitute exam. In the case of approval, the student has to appear for a substitute exam the date, time and place of which is decided in coordination with the relevant college and the students are informed via SMS and email.

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If a student did poorly in a midterm exam or a final exam, they are not permitted to sit for it again. Simply, once a student attends any formal exam, they have made a decision to do so and, thus, no compensation or recourse will be granted in any circumstance. If a student fail the course, s/he will have to repeat it the following year.

#### 4.5.6. Academic Dishonesty

Academic dishonesty (including but not limited to cheating and plagiarism) is strictly prohibited. As academic dishonesty depreciates efforts of the teacher to teach and devalues the attempts of students to learn, the ELC has zero tolerance for proven academic dishonesty. Depending on the type and severity of dishonesty, possible sanctions and charges (based on the decision of Disciplinary Committee(s) in the ELC, and/or University) may range from a repetition of the assignment, project, or exam to dismissal from University, as indicated below:

- 1. a repetition in the assignment, project, or exam;
- 2. a reduction in grade in the assignment, project, or exam;
- 3. a zero in the assignment, project, or the exam;
- 4. a suspension for a semester or a year;
- 5. or dismissal from University.

#### 4.5.7. Instructor's Office Hours

Students are encouraged to make use of their instructor's office hours. The instructor informs students of their office hours at the beginning of each semester. As well, the instructor's timetable (including their teaching and office hours) is posted outside their office.

#### 4.5.8. Students' Questions, Comments, Suggestions, and Criticism

If a student has a question, suggestion, comment, and/or criticism, they will be received by their instructor with pleasure. However, in approaching the instructor in any issue, the student's objective view and discretion are always expected. It must be noted that no increase or decrease to the student's mark is assigned for suggesting, criticizing, etc.

#### 4.5.9. Emergencies

In case of an emergency all students are to stay calm and deal with it appropriately following instructions given by their respective faculty.

a. Emergency Evacuation: In case of fire emergency or the like, students must leave the classroom immediately but calmly and go in the designated area. See the map and instructions posted on the wall near your classroom.

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- b. Emergency Ambulance: Call 911 from any office that is the nearest to you.
- c. First Aid Kit: First Aid Kit is located in the office of Students' Affairs as well as in the office of the campus's physician.
- d. Personal Emergency: If a student has an urgent chronic medical condition that might occur while they are in the classroom, the student needs to inform their instructor of the medical condition and its consequences at the beginning of each semester.

#### 4.6. Course Materials and Learning and Information Resources

#### **Course Materials**

#### 4.6.1. Students' Book & Material

Philpot, S. (2016). *Milestones in English: Student's Book with Online Skills A1*. Oxford University Press. UK: Oxford University Press.

Aldridge-Morris, K. (2016). *Milestones in English: Workbook A1*. Oxford University Press. UK: Oxford University Press.

#### 4.6.2. Teacher's Book & Material

The Teacher's book and related materials are available on itools USB which comes with the package.

In addition to the Teacher's book, the USB contains exercises for extra practice, video clips and audios, their script and assessment materials.

• Philpot, S. (2016). *Milestones in English: iTools USB (A1)*. Oxford University Press. Oxford, UK.

#### 4.6.3. Supplementary Materials

Oxford English Vocabulary Trainer app

Oxford Word-power Dictionary

Students are encouraged to purchase and use Oxford University Press's Graded Readers. They are made available to the students with reduced prices.

#### 4.6.4. Website Resources

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Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	30 %
3	Mid Term Exam (practical)			
4	Reports and essay	11		20 %
5	Final Practical Exam			
6	Final Exam	16	120 min	40 %
	Total Mark	S		100%

https://www.OUP.com/elt

www.youtube.com

#### 4.6.5. Further References

Students are encouraged to visit the OUP website for additional exercises related to their materials and level in English.

#### 4.7. Grading Standards

Linguistic progress of the students registered in *English Language I* (700140 - 4) is evaluated according to the following assessment measurements).

#### 4. 8. Technology Support

1. The general software that our students need to use in this course is checked below:

#### **General Technology**

- 1 Word processing programs: Microsoft Word, Pages ...etc
- 2 Spreadsheet programs: Microsoft Excel, Numbers ...etc



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3 Presentation programs: Microsoft PowerPoint, Keynote, Powtoons, Prizi .... Etc 4 Internet Tool e-mail 5 Search Engines (e.g., Google, Yahoo, Safari, Bing, etc.) **6** Others (specify)

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2. The general technologies that the instructor needs to use in the class and/or lab are:

	General Technology
1	Internet access and E-Mail
2	Spreadsheet programs: Microsoft Excel, Numbersetc
3	A data show projector
4	Video and audio media equipment
5	Digital camera
6	Presentation programs: Microsoft PowerPoint, Keynote, Powtoons, Prizi Etc
7	Scanner / CD writer
8	Word processing programs: Microsoft Word, Pagesetc
9	Others (Specify)

Course Units/Credit Hours	Lecture: 4 credit hours		
		<b>Contact hours</b>	Private study
	Lecture	60	130
	Assignments	2	18
Student workload	Practical	0	0
	Exams & Quizzes	8	20
	Sum	70	168
	Total Sum	23	8
Credits	8 ECTS C.Ps		

2. Course components (total contact hours and credits per semester):							
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total	
Contact Hours	60	0	0	60	7	67	

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	Credit	4	0	0	0	0	4
•	3. Additional	private study	y/learning h	ours expected	of students p	er week. 11.2	

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### **Level Two**

General Physics 4031101-4

General Biology 4011101-4

English Language (2) 7001402-4

The Biography of Prophet Muhammad (pbuh) 102101-2

Arabic Language 501101-2

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T6. Course Specifications (CS)



Course title: General Physics (1)



Course code: 4031101-4

This form Compatible with NCAAA 2013 Edition

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Institution: Umm AL – Qura University

#### **Course Specifications**

Date: 17/4/1439

College/Department : College of Appli	ed Science	<ul><li>Department of Ph</li></ul>	ysics
A. Course Identification and General Info	ormation		
1. Course title and code: General Phys	sics 1 (Co	de: 4031101-4)	
2. Credit hours: 4 Hrs			
3. Program(s) in which the course is of	fered. BSc	Physics; BSc Chemi	stry; BSc Biology; BSc
Mathematics.			
(If general elective available in many pr	rograms ind	icate this rather than	list programs)
4. Name of faculty member responsible		irse e <b>staff member</b>	
5. Level/year at which this course is of			
6. Pre-requisites for this course (if any)	):		
7. Co-requisites for this course (if any)	:		
8. Location if not on main campus: Ma	in campus	and Alzaher	
9. Mode of Instruction (mark all that ap	oply)		
a. traditional classroom	$\checkmark$	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments:			

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#### **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	<b>Contact hours</b>
<b>❖</b> Measurement	1	3
<ul> <li>The physical quantities, standards, and Units.</li> </ul>		
• The international system of units.		
<ul> <li>The Standard of time</li> </ul>		
<ul> <li>The Standard of length</li> </ul>		
<ul> <li>The Standard of Mass</li> </ul>		
<ul> <li>Precision and significant figures.</li> </ul>		
<ul> <li>Dimensional analysis.</li> </ul>		

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*	Vectors	2	6
	<ul> <li>Vectors and Scalars.</li> </ul>		
	<ul> <li>Adding vectors : graphical methods</li> </ul>		
	• Components of vectors.		
	• Adding vector: component method.		
	<ul> <li>Multiplications of vectors.</li> </ul>		
	• Vector laws in physics.		
*	Motion in one dimension	1	3
	<ul> <li>Particles kinematics.</li> </ul>		
	<ul> <li>Description of motion</li> </ul>		
	Average velocity		
	• Instantaneous velocity.		
	Accelerated motion.		
	<ul> <li>Motion with Constant Acceleration</li> </ul>		
	• Freely falling Bodies.		
	<ul> <li>Measuring free fall acceleration.</li> </ul>		
*	Motion in two and three dimensions	1	3
	<ul> <li>Position, velocity, and acceleration.</li> </ul>		
	<ul> <li>Motion with constant acceleration</li> </ul>		
	• Projectile motion		
	Uniform circular motion		
	<ul> <li>Velocity and acceleration vectors in circular motion</li> </ul>		
*	Force and motion	2	6
	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.  Work and Energy	1	3
••	1. Work done by constant force.	1	3
	<ol> <li>Work done by a variable force: one dimensional case.</li> </ol>		
	3. Work done by a variable force: two dimensional case.		
	4. Kinetic energy and work-energy theory.		
	5. Power.		

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

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#### **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.

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

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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.)

Course Units/Credit Hours	Lecture: 4 credit hours				
		<b>Contact hours</b>	Private study		
	Lecture	45	89		
	Assignments	0	15		
Student workload	Practical	Practical 42			
	Exams & Quizzes	6	20		
	Sum	93	146		
	Total Sum	239			
Credits		8 ECTS C.Ps			

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2. Course components (total contact hours and credits per semester):							
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total	
Contact Hours	45	0	0	42	6	93	
Credit 3 0 0 1 0 4							
3. Additional private study/learning hours expected of students per week.  9.73							

At the end of this Program or course the student should be able to

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	<b>Define</b> the physical quantities, physical phenomena, and basic principles of physics (such as the fundamental quantities, the derivative quantities, the international system of units, The standard of time, the standard of length, the distance, the vector quantity and scalar quantity, displacement, velocity, speed, acceleration, Newton's law, work, energy, power, density, pressure, Pascal principle, Archimedes Principle, flow rate of fluid, viscosity, quantity of heat, specific heat, heat capacity, temperature scale, refractive index, Snell's law, law of reflection, and focal length).	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: Board, Power point. 4. Discussions	Solve some example during the lecture. Discussions during the lectures Exams:  a) Quizzes (E- learning) b) Short exams (mid- term exams)
1.2	<b>Describe</b> the physical laws and quantities using mathematics (such as the equations of motion of the particle, the motion of freely falling bodies, Newton's law of motion, work, energy, power, Bernoulli equation, viscosity, Pascal principle, quantity of sensible heat, latent heat, law of reflection, and law of refraction).	5. Brain storming 6. Start each chapter by general idea and the benefit of it.	c) Long exams (final) d) Oral exams

#### **National Commission for**



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمسي

#### **Academic Accreditation & Assessment**

1.3	Record the data and the results of the experiments at the lab (such as the length of an object, the time required for an event, etc.).	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	Calculate some quantities (such as, converting units, calculate the velocity and acceleration of an object, calculate the flow rate of a fluid, calculate the specific heat of the material, calculate the refractive index of the material).	<ol> <li>Preparing main outlines for teaching.</li> <li>Following some proofs.</li> </ol>	Exams (Midterm, final, quizzes)     Asking about physical laws previously taught
2.2	<b>Differentiate</b> between the physical quantities (such as speed and velocity, scalar and vectors, etc.)	3. Define duties for	3. Writing reports on
2.3	<b>Analyse</b> quantitative results (such as dimensional analysis of the physical quantities, and experimental results).	each chapter 4. Encourage the	selected parts of the course.
2.4	<b>Explain</b> day life phenomena (such as heat transfer, fluid flow, floating of an object on a fluid, etc.).	student to look for the information in different	4. Discussions of how to simplify or analyze
2.5	<b>Measure</b> some physical quantity (such as viscosity, focal length of a lens, etc. ).	references. 5. Ask the student to attend lectures for practice solving problem.	some phenomena.
3.0	Interpersonal Skills & Responsibility		
3.1	<b>Show</b> responsibility for self-learning to be aware with recent developments in physics	Search through the internet and the library.	Evaluate the efforts     of each student in     preparing the report.
3.2	Write scientific report effectively.	<ul> <li>Small group discussion.</li> <li>Enhance self-learning skills.</li> <li>Develop their interest in Science through:</li> <li>(lab work, visits to scientific and research institutes).</li> <li>Write scientific reports.</li> </ul>	<ul> <li>Evaluate the scientific reports.</li> <li>Evaluate the team work in lab and small groups.</li> <li>Evaluation of students presentations.</li> </ul>

#### **National Commission for**



المملكة العربية السعودية الهيئة الوطنية الوطنية والاعتماد الأكاديمسى

#### **Academic Accreditation & Assessment**

4.0	Communication, Information Technology, Numerical		
4.1 4.2 4.3 4.4	Demonstrate the scientific report effectively.  Research about the material related to the course.  Calculate the slope of the graph and the physical quantities.  Operate the tools and equipment at the lab effectively.	<ul> <li>Incorporating the use and utilization of computer, network and websites.</li> <li>preparing a report on some topics related to the course depending on web sites</li> <li>writing scientific reposts .</li> </ul>	<ul> <li>Evaluating the scientific reports.</li> <li>Evaluating activities and homework</li> </ul>
5.0	Psychomotor		
5.1	<b>Perform</b> the experimental work safely and correctly.	Follow up the students in lab and during	Practical exam.
5.2	<b>Draw</b> the experimental results correctly.	carryout all experimental work.	Giving additional marks for the results with high and good accuracy

5. Map the top.)	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 #				((	Jse Pro	ogram		_	Learr provide	_		nes gram S	Specifi	cation	s)			
	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1	5.2
1.1	✓		✓															
1.2			✓															
1.3	✓	✓																
2.1				✓	✓	✓		✓										
2.2				<b>√</b>				✓										
2.3						✓												
2.4					✓	✓		✓										
2.5				✓														
3.1									✓	✓								
3.2									✓	✓								
4.1													✓	✓				
4.2													✓	✓				
4.3																	✓	
4.4																	✓	

#### **National Commission for**



المملكة العربية السعودية الهيئة الوطنية الوطنية والاعتماد الأكاديمي

**Academic Accreditation & Assessment** 

5.1									✓	
5.2									<b>✓</b>	

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Mark	s	<u> </u>	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)

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**

#### **National Commission for**



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

#### 1. List Required Textbooks

Halliday and Resnick and Jearal Walker, "Fundamental of Physics" 8 edition, Wiley, 2008.

- 2. List Essential References Materials (Journals, Reports, etc.)
- 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

Physics, 4<sup>th</sup> edition, By: Halliday, Resnick, and Krane, Wiley (1992)

Physics, 4<sup>th</sup> edition, By: J. Walker (2010)

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

#### www.uqu.sa/smattia

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

#### **National Commission for**



## الهيئة الوطنية للتقويم

والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

- 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:S. M. Atti	a
Signature:	Date Report Completed:
Name of Field Experience Teaching Sta	aff
Program Coordinator: <b>Dr.</b>	Fahd Al-Hashmi
Signature: Jahd Al-Hashmi Da	te Received:

#### **National Commission for**





المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Course Specifications**

#### **Umm Al-Qura University**

#### **English Language Center**

#### **English Language for Students of the Department of Physics**

#### 1. Basic Information

1. COURSE TITLE:		2. COURSE NUMBER:				
English Langua	7001402-4					
3. Course Required	Elective	4. Number of Credits:				
		4				
6. COURSE PEEQUISITES:		5. Number of Contact Hours:				
English Langu	nage: 7001402-4	Eight hours a week for a total of				
		60 hours per semester				
7. COURSE TIME: First Year /2 <sup>nd</sup> Semester						
Provoquisito 700140 4						
Prerequisite:700140-4						



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### 2. Course Description

This course is designed for the first-year students of the College of Applied Sciences. 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 the 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.

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	30 %
3	Mid Term Exam (practical)			
4	Reports and essay	11		20 %
5	Final Practical Exam			
6	Final Exam	16	120 min	40 %
	100%			



المملكة العربية السعودية الهيئة الوطنية التقويم والاعتماد الأكاديمسى

#### **Academic Accreditation & Assessment**

#### 3. Course Delivery Plan

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 1	8	
Week 3	Parts 2	8	
Week 4	Shapes 1	8	
Week 5	Shapes 2	8	
Week 6	<b>Describing Shapes and</b>	8	
Week 7	Describing Landscapes	8	
Week 8	Basic Math	8	
W	eek 8: Last meeting: Midter	rm Exam	
Veek 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	

#### **National Commission for**



المملكة العربية السعودية الهيئية الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

Course Units/Credit Hours	Lecture: 4 credit hours				
		<b>Contact hours</b>	Private study		
	Lecture	60	132		
	Assignments	2	15		
Student workload	Practical	0	0		
	Exams & Quizzes	8	22		
	Sum	70	169		
	Total Sum	23	9		
Credits		8 ECTS C.Ps			

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total
Contact Hours	60	0	0	0	8	68
Credit	4	0	0	0	0	4
3. Additional private study/learning hours expected of students per week. 11.26						

**Academic Accreditation & Assessment** 



المملكة العربية السعودية والاعتماد الأكاديم

Course: The Biography of Prophet Muhammad (pbuh)

Code: 102101-2

## Biography of Prophet Mohammed (pbuh)-102101 Course Description

#### **National Commission for**

**Academic Accreditation & Assessment** 



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### السيرة النبوية 101

#### أهداف در اسة المادة:

- فهم القرآن الكريم وأسباب نزوله والحكمة من تشريعاته.
  - 2. التعرف على الأديان المنتشرة في الجزيرة العربية قبل الإسلام.
- 3. دراسة الغزوات وفهم أسبابما واستخلاص الدروس والعبر منها.
- 4. استخلاص الدروس التربوية والخلقية والسلوكية التي تضمنتها السيرة النبوية.

#### توصيف المادة:

دراسة جغرافية الجزيرة العربية وأحوالها قبل بعثة النبي  $\rho$  ، ثم دراسة العصر النبوي من ولادة النبي  $\rho$  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 من 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.

#### مفر دات المادة

تعريف السيرة ومميزاتما وفوائد دراستها.

أهم مصادر ومراجع السيرة.

جغرافية بلاد العرب

مكة ومكانتها

لمحة عن أحوال العالم قبيل بعثة النبي ρ

#### **National Commission for**

**Academic Accreditation & Assessment** 



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

### مكة المكرمة مركزها الديني ، السياسي والاقتصادي قبل الإسلام.

#### الرسول ρ من مولده إلى بعثته:

- مؤلده ونشأته
- حادثة شق الصدر
- رحلته إلى الشام مع عمه أبي طالب
- ظهور شخصيته في المحتمع المكي.
  - اشتراكه في حرب الفحار.
    - حلف الفضول.
- سفره في تجارة السيدة خديجة وزواجه منها.
  - بناء الكعبة و الحجر الأسود.
    - إرهاصات النبوة.

#### البعثة النبوية:

- نزول الوحى عليه في الغار.
  - مراتب الوحى .
    - فترة الوحي.
- خصائص الرسالة وتبرز فيها عالمية الدعوة.

#### العهاد المكي:

- الدعوة سرا
- الجهر بالدعوة.
- موقف قريش من الدعوة.
  - الهجرة إلى الحبشة.
  - تفنيد قصة الغرانيق.
- إسلام عمر وحمزة رضى الله عنهما.
  - صحيفة المقاطعة، والحصار.
- وفاة أبو طالب، وحديجة رضي الله عنها.
  - خروجه إلى الطائف.

#### **National Commission for**

#### Academic Accreditation & Assessment



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

1	المع	 1 Km 1	

- دعوة القبائل.
  - بيعتا العقبة.
- الهجرة إلى المدينة.
- خصائص الدعوة في العهد المكي.

#### العهد المدني:

- محتمع 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-

1

غزوة بني المصطلق - صلح الحديبية ونتائجه - غزوة حيبر.

#### انتشار الدعوة الإسلامية:

- انتشار الإسلام.
- مكاتبة الملوك والحكام
  - غزوة مؤته.
    - فتح مكة.
- غزوة حنين والطائف.
  - غزوة تبوك.
  - عام الوفود.

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المملكة العربية السعودية الهيئة الوطنية الوطنية والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

حجة الوداع.
 انتقال الرسول ρ إلى الرفيق الأعلى:

- أثر الوفاة على الصحابة رضي الله عنهم.
  - أهل الردة وقتال الصحابة لهم.
  - صفات الرسول p وأخلاقه وشمائله.
  - طريقته ρ في الدعوة وتعليم الناس.
    - بيت النبوة

المصادر والمراجع

الكتاب المقرر : الكتاب الذي أعدته الجامعة (صحيح الأثر وجميل العبر من سيرة حير البشر)

ابن هشام السيرة النبوية

ابن سعد الطبقات الكبرى

ابن كثير السيرة النبوية

الفصول في سيرة الرسول p

ابن القيم زاد المعاد

سليمان العودة السيرة النبوية في الصحيحين وعند ابن اسحاق.

المباركفوري الرحيق المختوم

زيد عبدالكريم الزيد . فقه السيرة

ρ المختار و سيرة النبي المختار

إبراهيم العلي صحيح السيرة النبوية

**Academic Accreditation & Assessment** 





المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

Course Units/Credit Hours	Lecture: 2 credit hours				
		<b>Contact hours</b>	Private study		
	Lecture	30	30		
	Assignments	0	15		
Student workload	Practical	0	0		
	Exams & Quizzes	3	12		
	Sum	33	57		
	Total Sum 90				
Credits		3 ECTS C.Ps			

2. Course con	nponents (to	Tutorial	Laboratory or Studio	its per semest Practical	Other: (Exams, Assignments and	Total
Contact Hours	30	0	0	0	Quizzes) 5	35
Credit	2	0	0	0	0	2
3. Additional private study/learning hours expected of students per week.  3.80						

#### **National Commission for**



الهيئة الوطنية التقويم

والاعتماد الأكاديمي

**Academic Accreditation & Assessment** 

Course: Arabic Language

Code: **501101-2** 

nagaistralli descentento a questimente	:	الرقسم
	:	التاريخ
	:	المشفوعات



الملكة العربية السعودية وزارة التعليم العال **جأمئة أكر القرك** كلية اللغة العربية

متطلب سابق	الوحدات الدراسية	اسم المقرر	رقم المقور
	7	اللغة العربية	0.11.1-7

#### أولا: أهداف المقرر:

- ١. تزويد الطالب بالقواعد النحوية اللازمة في حياته العلمية والعملية .
- ٢. تنمية الذوق الأدبي عند الطالب من حلال 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 ؛ لكونما لغة الحضارة الإسلامية العامة.

## ثانيا: المنهج:

٠٠٠ الد

- مقدمة : أهمية علوم العربية ، وأهدافها ،وأشهر علمائها وكتبها ، في فروعها المختلفة ( اللغوية النحوية الصرفية المعجمية – الأدبية ).
  - تعریف الحملة العربیة وأقسامها ( الاسمیة والفعلیة ):
- انقسام الاسم إلى معرفة ونكرة ذكر المعارف ( الضمائر أسماء الإشارة الأسماء الموصولة أسماء الإشارة ) .
  - · انقسام الاسم إلى معرب ومبنى :
  - 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 الآحر ) .
  - الجملة الاسمية ( المبتدأ والخبر كان وأحواتما إن وأحواتما ظن وأحواتما ).
  - الجملة الفعلية ( الماضى -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).

مكة المكرمة ص. ب: ١٣٣٤٤ فاكس: ٥٢٧٠٤٥٧ - ٥٢٨١٢١٢ سنترال ٥٢٧٠٠٠ مباشـــر: ٥٢٧٠٤٥١ مباشـــر

#### **National Commission for**



# المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

	:	الرقسم
	:	التساريخ
	:	المشفوعات
E.		



الملكة العربية السعودية وزارة التعليم العال جأمعة أمر القرك كلية اللغة العربية

- أحكام همزة الوصل والقطع .
- أحكام كتابة الهمزة المتوسطة والمتطرفة .
  - ٠٠ الصرف:
- الفعل المحرد والمزيد ( أبنية الثلاثي المحرد المزيد بحرف المزيد بحرفين المزيد بثلاثة بناء الرباعي المحرد ) .
  - الميزان الصرفي بإيجاز (تعريفه طريقة ميزان الكلمة المحردة والمزيدة ) .
  - طريقة الكشف في المعاجم المشهورة ( القاموس انحيط 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 الراححي .
      - التطبيق الصرفي لعبده الراححي .
    - الأدب الجاهلي والإسلامي لشوقي ضيف .
      - البلاغة الواضحة للحارم .
      - 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 – ٢٨١٢١٢ سنترال ٥٢٧٠٠٠ مباشر : ٥٢٧٠٤٥١

مطابع جامعة أم القرى

#### **National Commission for**



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

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الرقـــم : التـــاريخ : التـــاريخ : التـــاريخ التـــاريخ التـــاريخ التـــاريخ التـــاريخ التـــاري



الملكة العربية السعودية وزارة التعليم العالى جامعة أعراك كانت العربية كلية العربية

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

## إجراءات تقويم وتحسين المقور

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 .
    - وسائل تقويم المعرفة والمهارات المرتبطة بالمقرر .
      - ٦. توصيات ومقترحاته لتحسين وتطوير المقرر .

#### مجالات التعلم في المقور:

ينظر مقدمة البرنامج

## تقويم الطلاب في المقرر :

الجدول الزمني لمهام تقويم الطلاب خلال الفصل الدراسي				
رقم التقييم	طبيعة مهمة التقييم	الأسبوع المستد	نحق	نسبة الدرجة إلى درجة التقييم النهائي
١	اختبار تحريري دوري	السابع		%٢.
۲	واجب مترلي	الرابع		%1.
٣	اختبار قصير	العاشر	T.	%1.
٤	الامتحان النهائي	الأخير	۵.	%1.

مكة المكرمة ص. ب: ١٣٣٤٤ فاكس: ٥٢٧٠٤٥٧ – ٢٨١٢١٢ سنترال ٥٢٧٠٠٠ مباشــــر: ٥٢٧٠٤٥١

مطابع جامعة أم القرى

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المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

Course Units/Credit Hours	Lecture: 2 credit hours			
Student workload		<b>Contact hours</b>	Private study	
	Lecture	30	30	
	Assignments	0	12	
	Practical	0	0	
	Exams & Quizzes	4	15	
	Sum	34	57	
	Total Sum	9:	1	
Credits	<b>3</b> ECTS C.Ps			

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total
Contact Hours	30	0	0	0	4	34
Credit	2	0	0	0	0	2
3. Additional private study/learning hours expected of students per week.  3.8						

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المملكة العربية السعودية الهيئة الوطنية الهيئة الوطنية التقويم والاعتماد الأكاديمسي

## Kingdom of Saudi Arabia

## The National Commission for Academic Accreditation & Assessment

## **COURSE SPECIFICATION**

Course: Biology I: Zoology

Code: 4011101-4

**Biology Department** 

College Of Applied Sciences

Umm Al-Qura University



الهيئة الوطنية للتقويم والاعتماد الأكاديمي

**Academic Accreditation & Assessment** 

Institution: UM AL – QURA UNIVERSITY

College/Department : Faculty of Applied Science – Department of Biology

#### A Course Identification and General Information

Course title General Biology
Course code: 4011101-4

- 2. Credit hours: 4 hrs.
- 3. Program(s) in which the course is offered. : BSc Microbiology

Name of faculty member responsible for the course:

Botany academic staff members / Zoology academic staff members.

- 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.

## **B** Objectives

After completing this course student should be able to:

Define the principles and concepts of the living cells.

Differentiate between animal and plant cells

Aware of the protoplasmic and non-protoplasmic cell contents and its structure and function

- 4. Study the different types of animal and plants tissues (structure and function).
- 5. Understand the biological activities of the living cells.

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

The course will cover the principle of eukaryotic cell structure and function. This course will provide a conceptual and experimental background in biology sufficient to enable students to take courses that are more advanced in related fields.

1 Topics to be Covered		
Торіс	No of	Contact hours
	Weeks	

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Introduction:	1	6
- The living cells.	1	0
- The living cens.		
- Basis of cytology and histology.		
-Major differences between Eukaryotic and Prokaryotic cells.		
-Major differences between plant and animal cells		
Plant cell morphology and structure I	1	6
- Cell wall, middle lamella, types of pits.	_	
Con train, initiation amona, types of prisi		
- Structure and function.		
- Cytoplasmic ultra structure and function: Endoplasmic reticulum;		
mitochondria; Golgi apparatus, ribosomes		
Plant cell morphology and structure II	1	6
- Plastids, chloroplasts, chromoplast, leucoplast types, morphology,	1	0
ultra structure and function, distribution.		
-Non protoplasmic contents of plant cell ( cell vacuole – carbohydrates –		
proteins – fats and oils – crystals glycosides – latex – alkaloids – tannins		
- organic acids).		
Animal cell morphology and structure I	1	6
-Fine structure of the Cell membrane and Cell junctions	-	· ·
The structure of the centification and centifications		
-Functions of cell membrane (cell transport)		
-Mitochondria, Peroxisomes,		
Lysosomes (phagocytosis, autocytosis and pinocytosis		
Centrioles, cytoskeleton, microtubules and microfilaments,		
Animal / Plant cell morphology and structure: The Nucleus	1	6
-Nucleus, nuclear envelope, nucleopores, nucleoplasm, chromatin and		
nucleolus. Mitochondria, Golgi apparatus and functions of each organelle.		

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Plant morphology and anatomy -Meristematic tissues in plants – classification of meristematic tissues – Apical and lateral meristems- Permanent tissues. Dermal system, ground system and vascular system. Ground system; parenchyma cell, collenchyma cell and sclerenchyma cell.  Seed germination, conditions necessary for seed germination,	2	12
dicotyledonous seeds and seedling 1) broad bean ( <i>Vicia faba</i> ), kidney bean ( <i>Phaseolus vulgaris</i> ), monocotyledonous seeds and seedling 1) maize ( <i>Zea mays</i> )		
Plant morphology  Morphology of the root – functions of the root, zones of the root, types of the roots, Adventitious roots	1	6
Plant morphology  Morphology of the stem- functions of the stem- origin, functions and types of the buds- Stem branching- habit of the stem- Metamorphosis of the stem.	1	6
Plant morphology Morphology of the leaf- functions of the leaf- parts of the leaf- Arrangement of the leaf- types of the leaf- leaf venation- leaf metamorphosis	1	6
Animal Histology I -Introduction to Animal tissues difference and distribution of the animal tissues in the human body -Epithelial tissues, simple and stratified epithelia, glandular epithelia	1	6
Animal Histology II -Connective tissues :  Types of Cartilages  Types of Bones  Blood components	1	6

#### **National Commission for**

## المبتق الهما حيف التقوير والإغتراب الإنقارييني

المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمسى

#### **Academic Accreditation & Assessment**

Animal Histology III	2	12
-Muscular tissues:		
-Smooth – skeletal – cardiac muscles.		
-Nervous tissues:		
-Neuron and its types		
- Nerve fibres		
- Neuroglial cells.		
	14	84hrs
	weeks	

Course Units/Credit Hours	Lecture: 4 credit hours			
		Contact hours	Private study	
	Lecture	45	88	
	Assignments	0	15	
Student workload	Practical	42	20	
	Exams & Quizzes	8	22	
	Sum	95	145	
	Total Sum	24	0	
Credits	8 ECTS C.Ps	•		

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total
Contact Hours	45	0	0	42	8	95

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المملكة العربية السعودية الهيئة الوطنية لتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

Credit	3	0	0	1	0	4
3. Additional pr	r week. 9.67					

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: Description of the knowledge to be acquired

Upon successful completion of this course The student will be able to:

Student will be familiar with the general characters of plant cells.

Student will be aware with the differences between plant and animal cells.

Student will be familiar with protoplasmic and non protoplasmic contents of plant cell.

Student will be familiar with the different types of plant tissues, their functions and distribution within plant body.

- 1- Define the difference between prokaryotic and eukaryotic cells.
- 2- Describe the fine structure and functions of all living organelles.
- 3- Explain biological activities of the animal cells.
- 4- Detect the difference between animal tissues.
- 5- Explain the function of animal tissues.
- 6- Discuss the distribution of all animal tissues in the body organs.
- (ii) Teaching strategies to be used to develop that knowledge

The methodology includes a combination of lectures by the lecturer, seminar presentation by the students and web-interactions.

At the end of the programme, students will be divided into groups for seminar presentation on



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important areas of the course to assess their understanding and comprehension of the course. All students will be involved in on-line learning process and each student is required to create an

E-mail address to facilitate student web interactions.

**Using images and movies** 

Encouraging students to collect the new information about what the new in Microbiology Enable the reference books and scientific sites concerning General biology in internet.

(iii) Methods of assessment of knowledge acquired:

Periodical exam and reports 10%

Mid-term theoretical exam 20%

Mid-term practical exam 5%

Final practical exam 15%

Final exam 50%

#### b. Cognitive Skills

#### (i) Cognitive skills to be developed

Having successfully completed the course students should be able to:

xplain the structure and function of the plant and animal cells.

Understand the ultrastructure and function of living organelles.

Follow some of the biological activities of the cell.

List types of plant and animal tissues.

Differentiate between plant and animal tissues.

Explain specific characters of each tissues.

Classify the plants and animal tissues

The student will be able to detect the plant and animal tissues in the selected organs examined under the microscopic.

- (ii) Teaching strategies to be used to develop these cognitive skills:
- Lectures
- -Brain storming
- -Discussion
- (iii) Methods of assessment of students cognitive skills
- Exam must contain questions that can measure these skills.
- Ouiz and exams
- Discussions after the lecture

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المملكة العربية السعودي والاعتصاد الأكاديم

#### c. Interpersonal Skills and Responsibility

At the end of the course, the student will be able to:

#### Describe the structure of the cell

- Explain most of the biological activities of the cell
- Make short presentation about the cell and the animal tissues.
- Defined the desirable sections.

Teaching strategies to be used to develop these skills and abilities

- Lab work
- Case Study
- Active learning
- Small group discussion

## (iii) Methods for assessment of the students interpersonal skills and capacity to carry responsibility

Evaluate the efforts of 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** 

## d. Communication, Information Technology and Numerical Skills

Description of the skills to be developed in this domain. At the end of the course, the student will be able to:

Enhancing the ability of students to use computers and internet.

Interpret biological data

Present biological data orally.

Know how to write a report.

Teaching strategies to be used to develop these skills

Homework (preparing a report on some topics related to the course depending on web sites).

**Seminars presentation** 

Field visits to factories



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#### (iii) Methods of assessment of students numerical and communication skills

**Evaluation of presentations** 

**Evaluation of reports** 

**Practical exam** 

## e. Psychomotor Skills (if applicable)

At the end of the course, the student will be able to:

Practice the basic Lab. Skills.

Use light microscope in accuracy.

Prepare microscopic slides.

#### (ii) Teaching strategies to be used to develop these skills

- Follow up students the students in lab and during carryout all microbiological techniques

### Methods of assessment of students psychomotor skills

Giving additional marks for preparing correct media, bacterial slides, good seminar presentation Practical exam.

6. Schedule of Assessment Tasks for Students During the Semester					
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment	
1	Periodical Exam (s)	4	15 min	10 %	
2	Mid Term Exam (Theoretic)	8	60 min	20 %	
3	Mid Term Exam (practical)	9	30 min	10 %	
4	Reports and essay	11		5 %	
5	Final Practical Exam	15	60 min	15 %	
6	Final Exam	16	120 min	40 %	
	Total Mark	is	<u> </u>	100%	

#### **D.** Student Support

Arrangements for availability of faculty for individual student consultations and academic advice. (include amount of time faculty are available each week)

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Office hours: 10 h	*¢
Office Hours, 10 III	. Do

L	earning Resources
	Required Text(s):
	Reece et. al (2013) Campbell Biology 10 <sup>th</sup> edition. Benjamin Cunnings.
	Mauseth, J. (2008) Plant Anatomy. Blackburn Press
	Wojciech Paulina (2015) Histology: a text and atlas. LWW
	Recommended Reading List
	Electronic Materials, Web Sites
	Other learning material such as computer-based programs/CD, professional
	standards/regulations

#### 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.)

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

Providing class rooms with computers and labs with data show.

3.Other resources (specify --eg. If specific laboratory equipment is required, list

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requirements or attach list)

Availability of some reference bacterial strains

Availability different specific media and chemicals used for isolation.

- **G** Course Evaluation and Improvement Processes
- 1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching

Questionaries

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

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 movies.

Coupling the theoretical part with laboratory part

Periodical revision of course content.

4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution)

After the agreement of Department and Faculty administrations

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

Periodical revision by Quality Assurance Units in the Department and institution

Faculty member responsible for the course:

Prepared by faculty staff:	Signature:
1.Botany / Zoology academic staff members.	
Date Report Completed: 1.04.2018	

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# المملكة العربية السعودية الهيئة الوطنية التقويم والاعتماد الأكاديمي

Revised by:	Signature:
1. Dr. Khaled Elbanna.	
2. Dr. Hussein H. Abulreesh.	
3. Dr. Shady M. ElShehawy.	
Date: 1.04.2018	
Program Chair	Signature:
Dr. Hussein H. Abulreesh.	
Dean	Signature:
Date:	

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والاعتماد الأكاديمي

## **Level Three**

Fundamentals of Medical Physics 4032280-4

Differentiation and integration (2) 4042501-4

Cell Biology 4012312-2

General Physics (2) 4032102-4

Electricity and Magnetism 4032121-4



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## 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: 4032280-4



This form Compatible with NCAAA 2013 Edition



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## **Course Specifications**

Institution: Umm AL – Qura Universit	y	Date: 17/4/1439				
College/Department : College of Applied Science – Department of Physics						
A. Course Identification and General Information						
Course title and code: Fur	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 off (If general elective available in many program).			list programs)			
4. Name of faculty member responsible	for the co					
5. Level/year at which this course is offer						
6. Pre-requisites for this course (if any):	4031101	-4				
7. Co-requisites for this course (if any):	NIL					
8. Location if not on main campus: Mai	n male ca	ampus (Abdeia) and	Alzaher female			
9. Mode of Instruction (mark all that approximately 19)	ply)					
a. traditional classroom	✓	What percentage?	80%			
b. blended (traditional and online)		What percentage?	10%			
c. e-learning	<b>✓</b>	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						



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(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

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experimental background in physics sufficient to enable students to take courses that are more advanced in related fields.

Topics	No of Weeks	Contact hours
<ul> <li>Static force</li> <li>1 Equilibrium and Stability</li> <li>2 Equilibrium Considerations for the Human Body</li> <li>3 Stability of the Human Body under the Action of an External Force</li> <li>4 Skeletal Muscles</li> <li>5 Levers</li> <li>6 The Elbow</li> <li>7 Friction Standing at an Incline</li> </ul>	2	6
<ul> <li>★ Elasticity and Strength of Materials</li> <li>1 Longitudinal Stretch and Compression</li> <li>2 A Spring</li> <li>3 Bone Fracture: Energy Considerations</li> <li>4 Impulsive Forces</li> <li>5 Fracture Due to a Fall: Impulsive Force Considerations</li> <li>6 Airbags: Inflating Collision Protection Devices</li> <li>7-Whiplash Injury</li> <li>8 Falling from Great Height</li> <li>9 Osteoarthritis and Exercise.</li> </ul>	2	6
<ul> <li>❖ Wavs and Sound</li> <li>1 Properties of Sound</li> <li>2 Some Properties of Waves (Reflection, Refraction, Interference, Diffraction)</li> <li>3 Hearing and the Ear (Performance, Frequency and Intensity and Loudness)</li> <li>4 Bats and Echoes</li> <li>5 Sounds Produced by Animals</li> <li>6 Acoustic Traps</li> </ul>	2	6

#### **National Commission for**



المملكة العربية السعودية الهيئة الوطنية الوطنية والاعتماد الأكاديمي

7 Clinical Uses of Sound		
8 Ultrasonic Waves		
Exercises		
1 <sup>st</sup> Class Test Exam		
<b>❖</b> Electricity		
1 The Nervous System		
2 The Neuron		
3 Electrical Potentials in the Axon		
4 Action Potential		
5 Axon as an Electrical Cable	2	6
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		
❖ Optics		
1 Vision.		
2 Nature of Light		
3 Structure of the Eye		
4 Accommodation		
5 Eye and the Camera	2	6
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		
<b>❖</b> Atomic Physics		
1 The Atom		
2 Spectroscopy		
3 Quantum	2	6
4 Electron Microscope		
5 X-rays		
6 X-ray Computerized Tomography		
7 Lasers		
7.1 Lasers application in medicine		
Exercises		

# المينة الوطانية التقوير والإعتباد الإنقاديين

**Academic Accreditation & Assessment** 

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمسى

<b>❖</b> Nuclear Physics		
1 The Nucleus		
2 Magnetic Resonance Imaging	3	9
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		
Exercises and Solved problems		
2 <sup>nd</sup> Class Test Exam		
	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)

Course Units/Credit Hours	4 (3+1+0) C. H					
		<b>Contact hours</b>	Private study			
	Lecture	45	60			
	Assignments	0	10			
Student workload	Practical	42	21			
	Exams & Quizzes	8	20			
	Sum	95	111			
	Total Sum	206				
Credits	<b>7</b> ECTS C.Ps					



المملكة العربية السعودية الهيئة الوطنية الوطنية الوطنية التقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

2. Course components (total contact hours and credits per semester):  Lecture Tutorial Laboratory or Studio Practical Other: (Exams, Assignments and Quizzes)  Total Quizzes)									
Contact Hours	45	0	0	42	8	95			
Credit	3	0	0	1	0	4			
3. Additional private study/learning hours expected of students per week.  7.4									

## 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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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	And Course Learning Strategies	
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	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.

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# المينة الوطنية التقوير المؤالية التقوير المؤالية المؤالي

# المملكة العربية السعودية الهينة الوطنية للتقويم والاعتماد الأكاديمي

		6. Start each chapter by general idea and the benefit of it.						
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	<b>Cognitive Skills</b>							
2.1	Apply the laws of medical physics.	Preparing main outlines for teaching	1.Midterm's exam. Exams, short quizzes					
2.2	Solve problems in Physics by using suitable mathematical principles	2.Following some proofs 3.Define duties for each chapter 4.Encourage the student to look for	2. Asking about physical laws previously taught 3. Writing reports on selected parts					
2.3	Analyse and interpret quantitative results	the information in different references	of the course 4.Discussions of how to simplify or					
2.4	Express the medical physical phenomena mathematically.	5.Ask the student to attend lectures for practice solving problem	analyze some phenomena					
2.0	Interpersonal Skills & Responsibility							
3.0	Interpersonal Skills & Resp	onsibility						
3.0 3.1	Show responsibility for self-learning to be aware with recent developments in physics.  Work effectively in groups and exercise leadership when appropriate.	<ul> <li>Search through the internet and use the library.</li> <li>Lab work.</li> <li>Small group discussion.</li> <li>Enhance educational skills.</li> <li>Develop their interest in Science through: (lab work, field trips, visits to scientific and research.</li> </ul>	<ul> <li>Evaluate the efforts of each student in preparing the report.</li> <li>Evaluate the scientific values of reports.</li> <li>Evaluate the work in team.</li> <li>Evaluation of the role of each student in lab group assignment</li> <li>Evaluation of student</li> </ul>					
3.1	Show responsibility for self-learning to be aware with recent developments in physics.  Work effectively in groups and exercise leadership when	<ul> <li>Search through the internet and use the library.</li> <li>Lab work.</li> <li>Small group discussion.</li> <li>Enhance educational skills.</li> <li>Develop their interest in Science through: (lab work, field trips,</li> </ul>	<ul> <li>student in preparing the report.</li> <li>Evaluate the scientific values of reports.</li> <li>Evaluate the work in team.</li> <li>Evaluation of the role of each student in lab group assignment</li> </ul>					
3.1	Show responsibility for self-learning to be aware with recent developments in physics.  Work effectively in groups and exercise leadership when	<ul> <li>Search through the internet and use the library.</li> <li>Lab work.</li> <li>Small group discussion.</li> <li>Enhance educational skills.</li> <li>Develop their interest in Science through: (lab work, field trips, visits to scientific and research.</li> <li>Encourage the student to attend lectures regularly</li> <li>Give students tasks of duties</li> </ul>	<ul> <li>student in preparing the report.</li> <li>Evaluate the scientific values of reports.</li> <li>Evaluate the work in team.</li> <li>Evaluation of the role of each student in lab group assignment</li> <li>Evaluation of student</li> </ul>					
3.1	Show responsibility for self-learning to be aware with recent developments in physics.  Work effectively in groups and exercise leadership when appropriate.	<ul> <li>Search through the internet and use the library.</li> <li>Lab work.</li> <li>Small group discussion.</li> <li>Enhance educational skills.</li> <li>Develop their interest in Science through: (lab work, field trips, visits to scientific and research.</li> <li>Encourage the student to attend lectures regularly</li> <li>Give students tasks of duties</li> <li>Technology, Numerical</li> <li>Homework</li> </ul>	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 presentations  • Evaluation of presentations					
3.1 3.2 4.0 4.1 4.2	Show responsibility for self-learning to be aware with recent developments in physics.  Work effectively in groups and exercise leadership when appropriate.  Communication, Information and written form  Collect and classify the material for a course	<ul> <li>Search through the internet and use the library.</li> <li>Lab work.</li> <li>Small group discussion.</li> <li>Enhance educational skills.</li> <li>Develop their interest in Science through: (lab work, field trips, visits to scientific and research.</li> <li>Encourage the student to attend lectures regularly</li> <li>Give students tasks of duties</li> </ul>	<ul> <li>student in preparing the report.</li> <li>Evaluate the scientific values of reports.</li> <li>Evaluate the work in team.</li> <li>Evaluation of the role of each student in lab group assignment</li> <li>Evaluation of student presentations</li> </ul>					
3.1 3.2 4.0 4.1	Show responsibility for self-learning to be aware with recent developments in physics.  Work effectively in groups and exercise leadership when appropriate.  Communication, Information Communicate effectively in oral and written form  Collect and classify the material	<ul> <li>Search through the internet and use the library.</li> <li>Lab work.</li> <li>Small group discussion.</li> <li>Enhance educational skills.</li> <li>Develop their interest in Science through: (lab work, field trips, visits to scientific and research.</li> <li>Encourage the student to attend lectures regularly</li> <li>Give students tasks of duties</li> <li>Technology, Numerical</li> <li>Homework</li> <li>preparing a report on some topics related to the course depending</li> </ul>	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 presentations  • Evaluation of presentations  • Evaluation of reports  • Practical exam					

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5.0	Psychomotor		
5.1	N. A	N. A	N. A

	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	1.4	1.5	1.6	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1
1.1	✓		✓																
1.2			<b>√</b>		<b>√</b>	<b>✓</b>													
1.3	✓	✓		<b>√</b>															
2.1							✓	✓	✓		✓								
2.2							<b>✓</b>				✓								
2.3									✓										
2.4								✓	✓		✓								
2.5							✓												
3.1												✓	✓						
3.2												✓	✓						
4.1																✓	✓		
4.2																✓	✓		
4.3																	✓		
4.4																✓			
5.1																			

6. Schedule of Assessment Tasks for Students During the Semester						
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment		
1	Periodical Exam (s)	4	15 min	10 %		
2	Mid Term Exam (Theoretic)	8	60 min	20 %		

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# المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Marks		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)

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" 3<sup>rd</sup> 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, 4<sup>th</sup> edition, By: Halliday, Resnick, and Krane, Wiley (1992)

Physics, 4<sup>th</sup> 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.



Academic Accreditation & Assessment

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## 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)

#### **National Commission for**

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## الهيئة الوطنية للتقويم

#### **Academic Accreditation & Assessment**

- 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: Ramadan Chi	Date Report Completed: 23/4/1439					
Name of Field Experience Teaching Staff						
Program Coordinator:Dr. Fahd A	ll-Hashmi					
Signature: John 41-Washwi	Date Received: 23/4/1439					

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المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

## **Course Specifications**

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

**Course: Differentiation and integration (2)** 

Code: 4042501-4

#### **National Commission for**



**Academic Accreditation & Assessment** 

Institution

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

## **Course Specifications**

(Differentiation and integration (2) (4042501-4))

## **COURSE SPECIFICATIONS**

Umm Al-Qura University

College/Department Faculty of Applied Science/ Department of Mathematical Science						
A. Course Identification and General Information						
1. Course title and code: Differentiation and integration (2), 4042501-4						
2. Credit hours 4 Hours						
3. Program(s) in which the course is offered. Mathematics						
(If general elective available in many programs indicate this rather than list programs)						
4. Name of faculty member responsible for the course ****						
5. Level/year at which this course is offered Second year/first semester						
6. Pre-requisites for this course (if any) Calculus (4041101-4)						
7. Co-requisites for this course (if any)						
8. Location if not on main campus Al-Abdia and AlZher 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:						



الهيئة الوطنية التقويم

#### **Academic Accreditation & Assessment**

#### **B** Objectives

1. What is the main purpose for this course?

By the end of the course the students will learn the following main concepts:

- -Some properties and Aids in evaluating definite integrals and applications of the integrals..
- Transcendental functions and its differentiation.
- Inverse of a functions and its differentiation.
- Techniques of integration.
- -Indeterminate forms and improper integrals.
- 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. Encouraging students to collect problems from web based reference material and supervise classroom discussions.
  - 2. Update references used in teaching process.
  - 3. Use e-learning facilities more efficiently.
  - 4. Use computer packages for solving exercise

## 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		
List of Topics	No. of	Contact Hours
	Weeks	

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The first fundamental theorem of calculus, the second theorem of calculus, the mean value theorem for integrals and the use of symmetry, the area of a plane region, volume of solids, length of a plane curve.	3	12
The natural logarithm function, inverse functions and their derivatives, the natural exponential function and logarithm functions, The inverse trigonometric functions and their derivatives, the hyperbolic functions and their inverses.	5	20
Basic integration rules, integration by part, some trigonometric integrals, rationalizing substitution, integration of rational functions using partial fractions.	4	16
Indeterminate forms of type 0/0, other indeterminate forms, improper integrals: infinite limits of integration, improper integral: infinite integral.	3	12

<b>Course Units/Credit Hours</b>	4 (4+0+0) C. H		
		<b>Contact hours</b>	Private study
	Lecture	60	75
Student workload	Assignments	0	15
	Practical	0	0
	Exams & Quizzes	8	20
	Sum	68	110
	<b>Total Sum</b>	178	
Credits	6 ECTS C.Ps		



المملكة العربية السعودية الهيئية الوطنيية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total
Contact Hours	60	0	0	0	7	67
Credit	4	0	0	0	0	4
3. Additional private study/learning hours expected of students per week.  6.67						

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

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods		
1.0		Knowledge			
1.1	Define the related basic scientific facts, concepts, principles and techniques calculus		Exams Home work.		
1.2	Recognize the relevant theories and their applications in basic mathematics.	Problem Solving			
2.0		Cognitive Skills			
2.1	Representing problems mathematically.	Lectures Tutorials	Exams Quizzes.		
2.2	How to distinguish different rules in calculus.	Solve Problem Brain Storming	Homework. Discussion		
3.0	Interpersor	nal Skills & Resp	oonsibility		
3.1	Develop connections of calculus with other disciplines	Cooperative	Home work.		
	Solve problems using a range of formats and approaches in basic science	Competitive	Reports. Quizzes.		
3.2	show the ability to work independently and within groups.		Discussion		
4.0	Communication, Information Technology, Numerical				
4.1	Learn how to summarize lectures or to	Lectures	Home work.		

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المملكة العربية السعودية الهيئة الوطنية الهيئة الوطنية التقويم والاعتماد الأكاديمسي

#### **Academic Accreditation & Assessment**

	collect materials of the course.	tutorials brain storming	Reports. Discussion
4.2	Learn how to solve difficulties in learning: solving problems – enhance educational skills		
5.0		Psychomotor	
	Not a	pplicable	

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	30 %
3	Mid Term Exam (practical)			
4	Reports and essay	11		20 %
5	Final Practical Exam			
6	Final Exam	16	120 min	40 %
Total Marks			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)
- 1- Office hours per week in the lecturer schedule (6 hours per week).
- 2- Contact with students by e-mail, SMS, and e-learning facilities.



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# E. Learning Resources

1. Required Text(s)

Calculus (Ninth Edition) by Dale Varberg, Edwin Purcell and Steven Rigdon, chapers 4-8

2. Essential References

Calculus (Ninth Edition) by Dale Varberg, Edwin Purcell and Steven Rigdon

3. Recommended Books and Reference Material (Journals, Reports, etc) (Attach List):

4. Electronic Materials, Web Sites etc

http://en.wikipedia.org/wiki/Calculus

5. Other learning material such as computer-based programs/CD, professional standards/regulations:Maple

# 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 with capacity of 25-students.
- Library.
- 2. Computing resources:

Not available

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:
- Student feedback through electronic facilities organized by the deanship of registration and acceptance.
- 2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

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# المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

- Evaluation of the teachers by internal & external faculty members.
- Visiting to the classrooms.
- Mutual visits between colleagues and giving advices to each other after each lecture
- 3 Processes for Improvement of Teaching
- Analysis of student course evaluation and feedback
- Peer evaluation and feedback
- Review of course portfolios
- Workshops on pedagogical methods
- 4. Processes for Verifying Standards of Student Achievement (eg. 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)
- Analysis of course assessments by other reviewers on a periodic basis.
- 5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
- Material and learning outcomes are periodically reviewed internally and externally.
- Comparing course content and teaching methodologies with similar courses offered at other departments and universities.
- Studying the outcomes of the students' evaluations of the course and use it to improve teaching strategies.

Faculty or Teaching Staff:	
Signature:	Date Report Completed:
Received by:	Dean/Department Head
Signature:	Date



الهيئة الوطنية للتقويم

المملكة العربية السعودية

والاعتسساد الأكساديس







# Kingdom of Saudi Arabia

# The National Commission for Academic Accreditation & Assessment



Course Specifications (CS)



Program: Medical Physics





Course Coordinator: Dr. Gamal. Osman



Course code: 4012312-2



This form Compatible with NCAAA 2013 Edition



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمسى

# **Academic Accreditation & Assessment**

Institution: Umm AL – Qura University

# **Course Specifications**

Date: 17/4/1439

Course Identification and General Info	ormation		
Course title and code: Cell Biology (c	code: 40	12312-2)	
2. Credit hours: 2 (2+0+0) Hrs			
3. Program(s) in which the course is off	ered. B.S	6c Medical Physics.	
(If general elective available in many pro	ograms i	ndicate this rather than li	st programs)
4. Name of faculty member responsible	for the	course	
	Prof. Dr	. Ahmed Yahia	
5. Level/year at which this course is off		. Gamal Osman	
6. Pre-requisites for this course (if any):	401110	1-4	
7. Co-requisites for this course (if any):	NIL		
8. Location if not on main campus: Mai	n male c	ampus (Abdeia) and Alza	her female campus.
9. Mode of Instruction (mark all that ap	ply)		
a. traditional classroom	<b>✓</b>	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 distribute tems.	ed and us	sed only one Traditiona	l classroom with 100%,



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# Academic Accreditation & Assessment

# 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 <sup>st</sup> Class Test	1	1
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

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# **Academic Accreditation & Assessment**

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  2 <sup>nd</sup> Class Test	2	1
	15 weeks	45 hrs

Course Units/Credit Hours	2	(2+0+0) C. H	
Student workload		<b>Contact hours</b>	Private study
	Lecture	30	30
	Assignments	0	10
	Practical	0	0
	Exams & Quizzes	4	14
	Sum	34	54
	Total Sum	88	8
Credits	<b>3</b> ECTS C.Ps		

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total
Contact Hours	30	0	0	0	4	34
Credit	2	0	0	0	0	2
3. Additional	3. Additional private study/learning hours expected of students per week.  4.07					

# 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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, insert appropriate assessment methods that accurately measure and evaluate the learning outcome.

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# **Academic Accreditation & Assessment**

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	Course Teaching	Course Assessment
#	And Course Learning Outcomes	Strategies	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.	<ol> <li>Demonstrating the basic principles through lectures.</li> <li>Discussing phenomena with illustrating pictures and diagrams</li> <li>Lecturing method: Board, Power point</li> <li>Discussions</li> <li>Brain storming</li> <li>Start each chapter by general idea and the benefit of it.</li> </ol>	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 understand how cancer occurs.		Mid- term theoretical exam 20%
	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		

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# **Academic Accreditation & Assessment**

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 Technolo  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

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Mark	is s		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)

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**



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### **Academic Accreditation & Assessment**

- 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



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### **Academic Accreditation & Assessment**

- 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: Pro	f. Dr. Gamal Osman
Signature:	Date Report Completed: 23/4/1439
Name of Field Experience Teachin	ng Staff
Program Coordinator:	
Signature:	Date Received: 23/4/1439



الهيئة الوطنية للتقويم

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**Academic Accreditation & Assessment** 





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



T6. Course Specifications (CS)



Course title: General Physics (2)



Course code: 4032102-4



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**Academic Accreditation & Assessment** 

# **Course Specifications**

Institution: Umm AL – Qura Universit	<b>y</b>	Date: 15/3/1439	
College/Department : College of Applie	ed Science	- Department of Ph	ysics
A. Course Identification and General I	nformatio	n	
1. Course title and code: General Physic	ics 2 (co	de: 4032102-4)	
2. Credit hours: 4 Hrs			
3. Program(s) in which the course is off (If general elective available in many program of the course is off the course is off (If general elective available in many program of the course is off the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course is off (If general elective available in many program of the course available in many program of (If general elective available in many program of (If g			list programs)
<ul> <li>4. Name of faculty member responsible</li> <li>One of the</li> <li>5. Level/year at which this course is off</li> </ul>	e <mark>academi</mark> e	c staff member	
6. Pre-requisites for this course (if any)			
7. Co-requisites for this course (if any)	:		
8. Location if not on main campus: Mai		and Al Zaher	
9. Mode of Instruction (mark all that ap	ply)		
a. traditional classroom	<b>✓</b>	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments:			



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# Academic Accreditation & Assessment

# **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, such as particle dynamics, system of particles, collisions, rotational kinematics, rotational dynamics, oscillations, 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)
  - 1- From using the E-learning web based in the university web site, the students improve their IT skill
  - 2- Outlines of the physical laws, principles and the associated proofs.
  - 3- Highlighting the day life applications whenever exist.
  - 4- Encourage the students to see more details in the international websites and reference books in the library.
  - 5- Encourage the student to build an example of different experiments related to course
  - 6- Frequently check for the latest discovery in science

# C. Course Description (Note: General description in the form used in Bulletin orhandbook)

# Course Description:

The main purpose of the course to covering some advanced physics principle in mechanics, such as particle dynamics, system of particles, collisions, rotational kinematics, rotational dynamics, oscillations, 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.

Topics	No of Weeks	Contact hours
<ul> <li>Particle dynamics</li> <li>1- Force laws.</li> <li>2- Frictional Forces.</li> <li>3- The Dynamics of uniform Circular motion</li> <li>4- Equation of motion: constant and non-constant forces.</li> <li>5- Time-dependent forces; analytical methods</li> <li>6- Time-dependent forces: numerical methods.</li> <li>7- Drag forces and the motion of projectiles.</li> <li>8- Limitation of newton's law.</li> </ul>		3
<ul><li>Conservation of energy</li></ul>	1	3



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# **Academic Accreditation & Assessment**

	• Conservative force.		
	• Potential energy.		
	<ul> <li>One dimensional conservative systems.</li> </ul>		
	• Two-and three-dimensional conservative systems.		
	• Conservation of energy of a system of particles.		
	Mass and energy.		
	• Quantization of energy.		
	<b>(</b>		
	Custom of vantiales	1	3
**	System of particles		
	Two particle system		
	Many particle system		
	<ul> <li>Centre of mass of solid objects</li> </ul>		
	<ul> <li>Linear momentum of system of particles.</li> </ul>		
	<ul> <li>Conservation of linear momentum</li> </ul>		
	Work and energy in system of particles		
	• Systems of variable mass.		
*	Collisions	1	3
•			
	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		
		1.33	4
*	Rotational Kinematics	1.55	•
	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.		
1		ĺ	
	6- Relationship between linear and angular variables: vector form.		
*	•	1	3
*	Rotational dynamics	1	3
*	Rotational dynamics 6. Rotational dynamics	1	3
*	Rotational dynamics 6. Rotational dynamics 7. Kinetic energy of rotation and rotational inertia.	1	3
*	Rotational dynamics  6. Rotational dynamics  7. Kinetic energy of rotation and rotational inertia.  8. Rotational inertia of solid bodies	1	3
*	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	1	3
*	Rotational dynamics  6. Rotational dynamics  7. Kinetic energy of rotation and rotational inertia.  8. Rotational inertia of solid bodies	1	3



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# **Academic Accreditation & Assessment**

*	Angular momentum	1	3
	<ul> <li>Angular momentum of a particle</li> </ul>		
	• System of particles		
	Angular momentum and angular velocity		
	Conservation of angular momentum		
	• The spinning top.		
	• Quantization of angular momentum.		
*	Equilibrium of Rigid bodies	1	3
	• Condition of equilibrium.		
	• Center of Gravity.		
	• Examples of equilibrium.		
	• Stable, unstable, and Neutral equilibrium or rigid bodies in a		
	gravitational field.		
	• Elasticity.		
*	Gravitation	1.33	4
	Gravitation from the Ancients to Kepler.		
	• Newton and the law of universal gravitation.		
	• The gravitation constant G		
	• Gravity near the Earth's surface.		
	• Gravitational Effect of a spherical distribution of matter		
	Gravitational potential energy		
	• The gravitational field and potentials		
	• The motions of planets and satellites		
	• Universal gravitation		
*	Oscillations.	1.33	4
•	Oscillating systems.		
	<ul> <li>Oscillating systems.</li> <li>The simple harmonic oscillator.</li> </ul>		
	<ul> <li>Simple harmonic motion</li> </ul>		
1	<ul> <li>Energy considerations in simple harmonic motion.</li> </ul>		
	-		
	<ul> <li>Applications of simple harmonic motion</li> </ul>		
	<ul> <li>Applications of simple harmonic motion</li> <li>Simple harmonic motion and uniform circular motion.</li> </ul>		
	<ul> <li>Applications of simple harmonic motion</li> <li>Simple harmonic motion and uniform circular motion.</li> </ul>		



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# **Academic Accreditation & Assessment**

<b>♦</b> <i>W</i>	ave Motion	1	3
•	Mechanical waves.		
•	Types of waves.		
•	Traveling waves.		
•	Wave speed		
•	The wave equation		
•	Power and intensity in wave motion		
•	The principle of superposition		
•	Interference of waves		
•	Standing wave.		
•	Resonance.		
❖ So	ound Wave	1	3
•	The speed of sound.		
•	Traveling longitudinal waves.		
•	Power and intensity of sound waves.		
•	Standing longitudinal waves.		
•	Vibrating systems and sources of sound.		
•	Beats		
•	The Doppler effect.		
❖ So	lved problems	2	6
		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.

Course Unit/Credit hours	4 (3+1+0) C. H						
		Contact hours	Private study				
	Lecture	45	45				
Student workload	Practical	42	21				
	Assignments	0	15				

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### **Academic Accreditation & Assessment**

	Exams & Quizzes	7	22
	Sum	103	104
	Total Sum:	207	
Credit	7 ECTS C.Ps		

2. Course components (total contact hours and credits per semester):								
	Lecture	Tutorial	Laboratory	Practical	Other:	Total		
			or Studio		(Exams,			
					Assignments and			
					Quizzes)			
Contact	45	0	0	42	7	94		
Hours								
Credit	3	0	0	1	0	4		
2. Additional private study/learning become even stad of students non week.								

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

6.27

# 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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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.)

المينة الهياسية التقويز والإعتباد الأنقاطية

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# **Academic Accreditation & Assessment**

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 classical mechanics,	<ol> <li>Demonstrating the basic principles through lectures.</li> <li>Discussing phenomena with illustrating pictures and diagrams</li> <li>Lecturing method: Board, Power point</li> <li>Discussions</li> <li>Brain storming</li> <li>Start each chapter by general idea and the benefit of it.</li> </ol>	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 physics	<ol> <li>Demonstrating the basic principle of the experiment.</li> <li>Show the best ways to perform the experiments</li> <li>Show the best ways to demonstrate the results.</li> <li>Show the best way to write the reports about the experiment.</li> <li>Discussion with the student about the results.</li> </ol>	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	Solve problems in Physics by using suitable mathematical principles	Preparing main outlines for teaching     Section 2. Following some proofs	1.Midterm's exam. Exams,		
2.2	Analyse and interpret quantitative results	3.Define duties for each chapter     4.Encourage the student to look for the	short quizzes  2.Asking about		
2.3	Solve scientific problems related to industrial problems	information in different references 5.Ask the student to attend lectures for practice solving problem	physical laws previously taught 3.Writing reports on selected parts of the course 4.Discussions of how to simplify or analyze some phenomena		
3.0	Interpersonal Skills & Responsibil	ity			
3.1	Work effectively in groups  Show responsibility for self-learning to be aware with recent developments in physics	<ul> <li>Search through the internet and use the library.</li> <li>Lab work.</li> <li>Small group discussion.</li> </ul>	• Evaluate the efforts of each student in		

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# **Academic Accreditation & Assessment**

3.3	Acts as professional and responsible person	<ul> <li>Enhance educational skills.</li> <li>Develop their interest in Science through :( lab work, field trips, visits to scientific and research.</li> <li>Encourage the student to attend lectures regularly</li> <li>Give students tasks of duties</li> </ul>	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						
4.0	Communication, Information Technology, Numerical								
4.1	Use basic physics terminology in English	<ul> <li>Homework</li> <li>preparing a report on some topics related to the course depending on web sites.</li> </ul>	<ul><li>Evaluation of presentations</li><li>Evaluation of</li></ul>						
4.2	Collect and classify the material for a course	course depending on web sites.	reports  • Practical exam						
4.3	Communicate effectively in oral and written form		Homework.     Final exams.						
4.4	Acquire the skills to use the internet communicates tools.		- I mar exams.						
5.0	Psychomotor								
5.1	Use a perfect experimental tools to solve Physics problems in the Labs	Follow up the students in lab and during carryout all experimental work.	<ul> <li>Practical exam.</li> <li>Giving additional marks for the results with high and good accuracy</li> </ul>						

5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)

# المينة الهالية التهوير المينة الهالية التهوير والإغتراب الإقامية

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# **Academic Accreditation & Assessment**

Cours e 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. 3	3. 4	4. 1	4. 2	4. 3	4. 4	5. 1	5. 2
1.1		✓																
1.2			✓															
2.1						✓												
2.2							✓											
2.3								✓										
2.4										✓								
3.1																		
3.2									✓									
3.3											✓							
4.1															✓			
4.2														✓				
4.3													✓					
4.4																✓		
5.1																	✓	

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Mark	100%		

# D. Student Academic Counseling and Support



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# **Academic Accreditation & Assessment**

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. (4 hrs per week)

# **E Learning Resources**

1. List Required Textbooks

Physics, 4<sup>th</sup> 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, 4<sup>th</sup> edition, By: Halliday, Resnick, and Krane, Wiley (1992) Physics, 4<sup>th</sup> edition, By: J. Walker (2010)

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

www.ugu.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

Me



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# **Academic Accreditation & Assessment**

- 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:B. A. Korany	
Signature:	Date Report Completed:
Name of Field Experience Teaching Staff	
Program Coordinator:Dr. Fahd	Al-Hashmi
Signature: Zalid Al-Ziashwi	Date Received: 23/4/1439



المملكة العربية السعودية الهيئة الوطنية التقويم والاعتداد مداد الأكاد مدد







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



# T6. Course Specifications (CS)



Course title: Electricity and Magnetism



Course code: 4032121-4



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# **Course Specifications**

Institution: Umm AL – Qura University Date : 18/1/1438							
College/Department : College of Applied Science – Department of Physics							
A. Course Identification and General Information							
1. Course title and code: Electricity and Magnetism (Code: 4032121-4)							
2. Credit hours: <b>4</b> ( <b>3</b> + <b>3</b> + <b>0</b> ) <b>Hrs</b>							
3. Program(s) in which the course is offered. <b>B.Sc Physics</b> (If general elective available in many programs indicate this rather than list programs)							
4. Name of faculty member responsible		urse c staff member					
5. Level/year at which this course is off							
6. Pre-requisites for this course (if any)	: - Genera	al physics 2 ( 403110	1-4)				
7. Co-requisites for this course (if any)	:						
8. Location if not on main campus: Mai		and Alzaher					
9. Mode of Instruction (mark all that ap	ply)						
a. traditional classroom	✓	What percentage?	100%				
b. blended (traditional and online)	Ш	What percentage?					
c. e-learning		What percentage?					
d. correspondence		What percentage?					
f. other		What percentage?					
Comments:							

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# **B** Objectives

# 1. What is the main purpose for this course?

This course is designed to provide and define the fundamental properties of the electric charge, solve technical problems associated with the electrostatic force (Coulomb force), identify that at every point in the space surrounding a charged particle, the particle sets up an electric field, which is a vector quantity and thus has both magnitude and direction, identify how an electric field can be used to explain how a charged particle can exert an electrostatic force on a second charged particle even though there is no contact between the particles, explain how a small positive test charge is used (in principle) to measure the electric field at any given point, define electric capacitance and solve technical problems associated with capacitors of various symmetries, capacitors in series and parallel combination, the microscopic effect of dielectric materials on capacitance and stored energy, define electric current, current density, and solve technical problems involving DC networks of resistors, batteries, and capacitors, Ohm's Law, Kirchhoff's laws, and RC charging and decay circuits, calculate the potential difference between any two points in a circuit, distinguish a real battery from an ideal battery and, in a circuit diagram, replace a real battery with an ideal battery and an explicitly shown resistance.

- 9. Calculate the net rate of energy transfer in a real battery for current in the direction of the emf and in the opposite direction, define the magnetic field and magnetic flux, solve technical problems associated with the effect of static, non-uniform and uniform magnetic fields on moving charges and current-carrying wires, loops and the magnetic dipole, calculate the magnitude and direction of the magnetic field for symmetric current distributions using the Law of Biot-Savart and Ampere's Law, and state the limitations of Ampere's Law, state Faraday's Law of Induction with Lenz's Law and use these equations to solve technical problems associated with induction, calculate inductance according to the fundamental definition, solve technical problems associated with LR circuits and coils, and calculate the stored energy in magnetic fields. In addition to these items, the students should gain practical skills through performance some experimental class, 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 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:

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The course will cover the principle of physics, electric charge and Coulomb's law, the electric field, Gauss law, Electric potential, capacitors and dielectric, current and resistance, DC circuits. The magnetic field and Ampere's law. 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.

Topics		No of Weeks	Contact hours
Electric charge and Coulomb's law			
1- Introduction.			
2- Electric Charge			
3- Conductors and Insulators		1	3
4- Coulomb's law		•	
5- The charge is Quantized			
6- The charge is Conserved			
The Electric Field			
1- Fields.			
2- The Electric Field E			
3- The Electric Field of a Point Charges and Lines of Force	;	1	3
4- The Electric Field of Continuous Charge Distributions			
5- A Point Charge in an Electric Field			
6- A Dipole in an Electric Field			
<b>❖</b> Gauss Law			
1- IntroductionThe flux of a Vector Field			
2- The Flux of the Electric Field			
3- Gauss law		1	3
4- A Charged Insolated Conductor			
5- Applications of Gauss law			
6- Experimental Tests of Gauss law and Coulomb law			
<b>*</b> Electric Potential			
1- Electrostatic and Gravitational Forces			
2- Electrical Potential Energy			
3- Electric Potential			
4- Calculating the Potential from the Field			
5- Potential due to Point Charge		2	6
6- Potential due to a Collection of Point Charges			
7- The Electric Potential of Continuous Charge distribution	l		
8- Equipotential Surfaces			
9- Calculating the Field from the Potential			
10- An Insulated Conductor			



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	15 weeks	45 hrs
<ul><li>4. Two Parallel Conductors</li><li>5. Ampere's Law</li><li>6. Solenoids and Toroids.</li></ul>	2	6
<ol> <li>The Biot-Savart Law.</li> <li>Applications of the Biot-Savart Law</li> <li>Lines of Magnetic Field</li> </ol>		
Ampere's Law		
<ul><li>7. The Magnetic Force on a Current</li><li>8. The Magnetic Dipole</li></ul>		
6. Torque on a Current Loop		
5. The Magnetic Force on a Current		
4. The Hall Effect.		
3. Circulating Charges		
2. The Magnetic Force on a Moving Charge		
1. The Magnetic Field B		
The Magnetic Field	2	6
6. RC Circuits		
5. Multiloop Circuits		
4. Resistors in Series and Parallel		
3. Potential Differences		
2. Calculating the Current in a Single Loop		
1. Electromotive Force		
DC Circuits	1.5	5
6. Energy Transfers in an Electric Circuit		
5. Ohm's law: A Microscopic View		
4. Ohm's law		
3. Resistance, Resistivity, and Conductivity	1.5	5
2. Current Denstiy		
1. Electric Current		
<b>Current and Resistance</b>		
7- Dielectrics and Gauss law		
6- Dielectrics: an Atomic View		
5- Capacitor with Dielectric	1.5	3
4- Energy Storage in an Electric Field	1.5	5
<ul><li>2- Calculating the Capacitance</li><li>3- Capacitors in Series and Parallel</li></ul>		
=		
Capacitors and dielectrics  1- Capacitance  2. Calculating the Capacitance		

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# **Practical part:**

- 1. Safety and Security at the lab.
- 2. Introduction.
- 3. Determining the capacitance of a capacitor / connecting capacitors in series and in parallel
- 4. Studying Ohm's Law / connecting two resistors in series and in parallel
- 5. Determining the time constant of an RC circuit.
- 6. Kirchhoff's Rules (The Junction Rule and The Loop Rule).

Course Unit/Credit hours	4 (3+1+0) C. H					
		Contact hours	Private study			
	Lecture	45	55			
Student workload	Practical	42	21			
Student Workload	Assignments	0	15			
	Exams & Quizzes	7	20			
	Sum	94	111			
		2	05			
Credit	7 ECTS C.Ps					

2. Course components (total contact hours and credits per semester):								
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total		
Contact Hours	45	0	0	42	7	94		
Credit 3 0 0 1 0 4								
3. Additional private study/learning hours expected of students per week. 7.4								

# **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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, 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



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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	Solve some example during the lecture. Discussions during the lectures Exams: a) Quizzes (E-learning)	
1.2	Describe the physical laws and quantities using mathematics	point. 4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams	
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.	1. Exams (Midterm, final, quizzes)	
2.2	Solve problems in physics by using suitable mathematics.	<ul><li>2. Following some proofs.</li><li>3. Define duties for each chapter</li></ul>	2. Asking about physical laws previously taught	
2.3	Analyse and interpret quantitative results.	4. Encourage the student to look for the information in different	3. Writing reports on selected parts of the course.	
2.4	Apply physical principle on day life phenomena.	references. 5. Ask the student to attend lectures	4. Discussions of how to simplify or analyze some phenomena.	
2.5	Derive the physical laws and formulas.	for practice solving problem.		
3.0	Interpersonal Skills & Re	sponsibility		
3.1	Show responsibility for self- learning to be aware with recent developments in physics	<ul> <li>Search through the internet and the library.</li> <li>Small group discussion.</li> <li>Enhance self-learning skills.</li> </ul>	<ul> <li>Evaluate the efforts of each student in preparing the report.</li> <li>Evaluate the scientific reports.</li> <li>Evaluate the team work in lab</li> </ul>	
3.2	Work effectively in groups and exercise leadership when appropriate.	Develop their interest in Science through:     (lab work, visits to scientific and research institutes).	<ul><li>and small groups.</li><li>Evaluation of students presentations.</li></ul>	



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

# 5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.) Course **Program Learning Outcomes** LOs# (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 4.1 4.2 4.3 4.4 5.1 5.2 1.1 ✓ 1.2 1.3 ✓ 2.1 2.2 2.3 $\checkmark$ 2.4 √ 2.5 **√** 3.1 3.2 ✓ 4.1 4.2 ✓ 4.3

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و الاعتماد الأكاديم

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4.4							<b>✓</b>		
5.1								<b>√</b>	
5.2									✓

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Mark	S		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)

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, 4<sup>th</sup> 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)

University Physics with modern Physics, 13th edition, by: Hugh D. Young and Roger A. Freedman,



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Addison-Wesley, (2012).

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

(eg. www.youtube.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.)
  - 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
  - Scientific calculator.
- 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

- Questionaries
- 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
  - 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.



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- 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:Mongi Ben Moussa	
Signature:	Date Report Completed:
Name of Field Experience Teaching Staff	
Program Coordinator:Dr. Fahd Al	-Hashmi
Signature: Fahd Al-Hashmi	Date Received: 23/4/1439



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# **Level Four**

Theoretical Methods in Physics (1) 4032141-4

**Islamic culture (2) 601201-2** 

Animal Physiology (1) 4013331-3

The Holy Qur'aan (2) 605201-2

**Modern Physics 4032150-4** 

Biomechanics 4032293-3



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# T6. Course Specifications (CS)

Course title: Theoretical Methods in Physics (1)



Course code: 4032141-4



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# **Course Specifications**

Institution: Umm AL – Qura University Date : 18/2/1439							
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: 4032141-4)							
2. Credit hours: <b>4</b> ( <b>4</b> + <b>0</b> + <b>0</b> ) <b>Hrs</b>							
3. Program(s) in which the course is off (If general elective available in many program of the course is off the course is of the course is of the course is off the course is of the course is o			list programs)				
	ohamed M	I. Sabry					
5. Level/year at which this course is off	ered: 2 <sup>nd</sup> 1	(ear / Level 4					
6. Pre-requisites for this course (if any):	Different	iation and Integration	on (2) (4042501-4)				
7. Co-requisites for this course (if any)	:						
8. Location if not on main campus: Mai		and Alzaher					
9. Mode of Instruction (mark all that ap	ply)						
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:							



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### **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
<b>❖</b> Vector Analysis	3	12
Triple (Scalar-Vector) products-		
<ul> <li>Differentiation of vectors-</li> </ul>		
• grad, Div, Curl and Laplace's operator,		
Vector integral-		
<ul> <li>Green's, Gauss' and Stokes theorems,</li> </ul>		
General curvilinear coordinates-		
<ul> <li>vector operators in orthogonal curvilinear coordinates</li> </ul>		
<b>❖</b> Infinite series, Power series	2	8
Geometric series,		
<ul> <li>testing series for convergence,</li> </ul>		
<ul> <li>Alternating series,</li> </ul>		
<ul> <li>interval of convergence-</li> </ul>		
<ul> <li>expanding functions in power series,</li> </ul>		
Taylor and Maclaurin expansions,		
Solving Problems about Series		
❖ Partial Differentiation	3	12
Total differentials-		



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والاعستساد الأكساديسم

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	<ul> <li>Approximating using differentials,</li> </ul>		
	• chain rule		
	• Implicit differentiation, A		
	<ul> <li>pplication to Maximum and Minimum problems,</li> </ul>		
	<ul> <li>Lagrange Multipliers, Change of Variables,</li> </ul>		
	Differentiation of Integrals		
*	Fourier series and transforms	3	12
	<ul> <li>Simple Harmonic Motion and Wave Motion;</li> </ul>		
	<ul> <li>Periodic Functions,</li> </ul>		
	Average Value of a Function,		
	Fourier Coefficients,		
	<ul> <li>Complex Form of Fourier Series,</li> </ul>		
	• Even and Odd Functions,		
	• Applications of Fourier Series, Fourier Transforms.		
*	Ordinary differential equations	2	8
	• First order differential equations;		
	• separable differential equations,		
	• linear 1st order equations,		
	• 2nt order differential equations;		
	Homogeneous differential equations,		
	Non-homogeneous differential equations.		
*	Solution of Differential Equations by Laplace Transforms	2	8
	• The Laplace Transform,		
	<ul> <li>Convolution,</li> </ul>		
	• The Dirac Delta Function,		
	A Brief Introduction to Green Functions.		
		15	60 hrs
		weeks	

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

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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.)



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Course Unit/Credit hours		4 (4+0+0) C. H			
		Contact hours	Private study		
Student workload	Lecture	60	99		
	Practical	0	0		
Student Workload	Assignments	0	16		
	Exams & Quizzes	8	22		
	Sum	68	136		
		2	05		
Credit	7 ECTS C.Ps				

2. Course c	omponent	s (total co	ontact hours	and credits	per semester):				
	Lecture	Tutorial	Laboratory	Practical	Other:	Total			
			or Studio		(Exams,				
					Assignments and				
					Quizzes)				
Contact	60	0	0	0	8	68			
Hours									
Credit	4	0	0	0	0	4			
3	3. Additional private study/learning hours expected of students per week.								

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Recognize facts, principles and concepts of treating with vectors and scalars in mathematics and algebra	1- Demonstrating the basic principles through lectures.	Solve some example during the lecture. Exams:
1.2	Reproduce structured series of events and numbers in the form of Algebraic series.	Discussing phenomena     with illustrating pictures	a) Quizzes (E-learning) b) Short exams (mid- term exams)
1.3	Describe physics problems in terms of mathematical expressions likepartial differential equations and special functions	and diagrams 3. Lecturing method: Board, 4. Discussions	c) Long exams (final) d) Discussions during the lectures. Home work. Discussions during the class.

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2.0	Cognitive Skills	5. Brain storming 6. Start each chapter by general idea and the benefit of it.	
2.1	Differentiate between the mathematical methods to be used for of interpreting physics problems.  Interpret special mathematical and algebraic functions and partial differential equations in Physics by using suitable	<ol> <li>Preparing main outlines for teaching</li> <li>Following some proofs</li> <li>Define duties for each chapter</li> <li>Encourage the student</li> </ol>	1.Midterm's exam. Exams, short quizzes 2.Asking about methods previously taught 3.Discussions of how to simplify or analyze some phenomena
2.3	mathematical principles  Interpret numerical and quantitative events and results in terms of mathematical series and special functions.	to look for the information in different references 5.Ask the student to attend lectures for practice solving problem	
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	Evaluate the scientific values of solutions.
3.2	Work effectively in groups.	<ul> <li>Iibrary.</li> <li>Small group discussion.</li> <li>Enhance educational skills.</li> <li>Encourage the student to attend lectures regularly</li> <li>Give students tasks of duties</li> </ul>	<ul> <li>Evaluate the work in team</li> <li>Evaluation of the role of each student in lab group assignment</li> <li>Evaluation of students presentations</li> </ul>
4.0	Communication, Information Technolog	gy, Numerical	
4.1	Illustrate solution steps effectively in oral and written form	Homework     preparing a report on	Evaluation of presentations     Evaluation of reports
4.2	Research and classify the material for a course	some topics related to the course depending on	<ul><li>Practical exam</li><li>Homework.</li></ul>
4.3	Use basic physics terminology in English	web sites.	• Final exams.
4.4	Assess the skills to use the internet communicates tools.		
5.0	Psychomotor		
5.1	N/A		
5.2	N/A		

المبتد الوطلية التقوير والإعتباط الأنقاطية التقوير والإعتباط الأنقاطية المبتدة التقالية المبتدة المبتدة المبتدة المبتدة المبتدة المبتدة المبتدة المبتدة المبتدة المبتدئة المب

المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

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	3.3	3.4	4.1	4.2	4.3	4.4	5.1	5.2
1.1		✓																
1.2			✓															
1.3			✓															
2.1				✓	✓													
2.2							✓											
2.3							✓											
2.4																		
3.1									✓									
3.2										✓								
4.1													✓					
4.2														✓				
4.3															<b>✓</b>			
4.4																✓		
5.1																		
5.2																		

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	30 %
3	Mid Term Exam (practical)			
4	Reports and essay	11		20 %
5	Final Practical Exam			
6	Final Exam	16	120 min	40 %
	100%			



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### 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- 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.
- 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)



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### **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: #.5alk	Date Report Completed:
Name of Field Experience Teaching Staff	
Program Coordinator:Dr. Fahd Al-	-Hashmi
Signature: <b>Fahd Al-Hashmi</b>	Date Received: 23/4/1439



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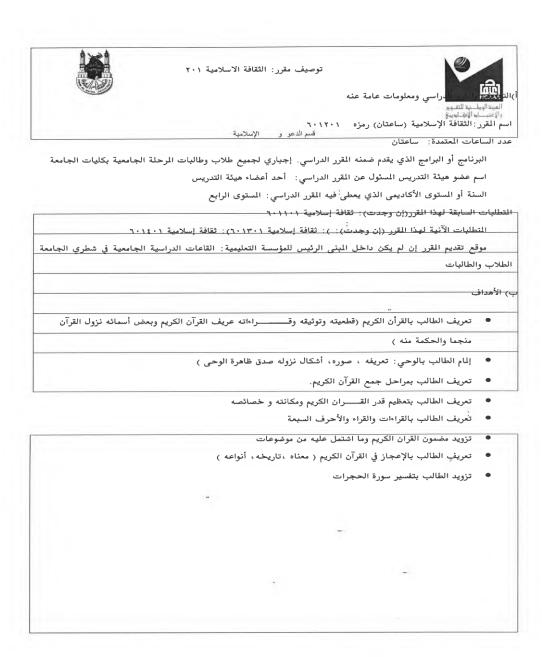
الهيئة الوطنية التقويم والاعتماد الأكاديمي

المملكة العربية السعودية

Course: Islamic Culture (2) Code: 601201-2

لموسسة: جامعة أم القرى كلية الدعوة وأصول الدين

ة الثقافة



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- تعريف الطالب بالسنة النبوية الشريفة (تعريفها ، مكانتها ، حجيتها ، جهود الصحابة رضوان الله عليهم في تلقيها
  وروايتها )
  - تعريف الطالب بمفهوم الاجماع و القياس والاجتهاد والفتوى .
    - تدریس الطالب عشرة أحادیــــــث نبویة شریفة

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

الموضوعات التي ينبغي تناولها

قائمة الموضوعات عدد ساعا

الأسابيع ت التدريس

القران الكريم: قطعيته وتوثيقه وقــــراءاته

		تعريف القران الكريم وبعض أسمائه:
		الوحي: تعريفه، صوره، أشكال نزوله
		صدق ظاهرة الوحي نزول القرآن منجماً والحكمة منه
		المرحّلة الأولى: في العهد النبوي كتابته
		المرحلة الثانية: في عهد أبى بكر
		المرحلة الثالثة: في عهد عثمان
		القراءات والقراء والأحرف السبعة
٤	۲	الوحدة الثانية
		تعظيم قدر القــــرآن الكريم
		مكانة القران الكريم
		_ خصائص القرآن الكريم
		مضمون القرآن الكريم وما اشتمل عليه من موضوعات
		سبيلنا نحو تعظيم قدر القران الكــــريم
	1	كيفية البحث عن آية أو موضوع قرأني

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الوحدة الثالثة	۲	٤
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 ـ نموذج منه		
الإعجاز العلمي التجريبي في القرآن الكريم، معناه، ضوابطه، نماذج منه		
الإعجاز النفسي، معناه ــ نموذج منه		
القسم الثاني	٣	,
تفسير سورة الحجرات		
القسم الثالث	١	۲
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		
الوحدة الثانية	,	۲
عناية المسلمين بالسنة النبوية وعلومـــها		
تعريف علم الحديث رواية		
تعریف علم الحدیث درایة		
- كتابة الحديث في العهد النبوي		
كتابة الحديث في العهد الراشدي		
تدوين الحديث في العهد الأموي والعباسي		

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	تصنيف الحديث وظهور الكتب الستة	
	منهج المحدثين في توثيق السنة	
	ثمرة علم الحديث دراية	
	معرفة كيفية البحث عن حديث ما؛ وتخرجه بإيجاز	
٤ ٢	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	
	نى)	المستفة
٤ ٢	دراســـة عشرة أحاديــــــث	
	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	
نتبارات : ٤	المحاضرة: ٣٢ مادة الدرس: ٢٨ اح	
	ماعات دراسة خاصة إضافية/ساعات التعلم المتوقع أن يستوفيها الطالب فصليا	<u>-</u> -۳
	لف الطالب بقراءة كتاب له صلة بالمقرر وتلخيصه	– یک
	ض الأسئلة ونتائج التجربة على المدرس على البريد الالكتروني	- عر



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### ٤- المعارف:

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

- يعرف القرآن الكريم (قطعيته وتوثيقه وقـــــراءاته عريف القرآن الكريم وبعض أسمائه نزول القرآن منجماً والحكمة منه )
  - يلم بالوحي: تعريفه ، صوره، أشكال نزوله صدق ظاهرة الوحي )
    - يعرف مراحل جمع القرآن الكريم.
    - تعظیم قدر القـــرآن الکریم ومکانته 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
  - یلم بمفهوم الاجماع و القیاس والاجتهاد والفتوی .
    - يعرف عشرة أحاديــــــث 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:

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 وقــــــراءاته عريف القرآن الكريم وبعض أسمائه نزول القرآن منجماً والحكمة
   منه )
  - يبين الوحي: تعريفه ، صوره، أشكال نزوله صدق ظاهرة الوحي )

- يعدد مراحل جمع القرآن الكريم.
- یوضح تعظیم قدر القـــرآن الکریم ومکانته 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 أحاديــــــــــ نبوية شريفة .
  - ٢--استراتيجيات التدريس المستخدمة لتنمية تلك المهارات:
  - توزیع بعض مفردات المقرر على الطلاب لتحلیلها.
  - 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:
    - البادرة 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 المكتبى 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.

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		المهارات الحركية النفسية (لاتوجد):
		جدول مهام تقويم الطلاب خلال الفصل الدراسي:
/.Y·	الثامن	اختبار نصفي
7.4.	جميع الأسابيع	الملاحظة المباشرة لقياس المهارات على طريقة التقويم المستمر
7.3.	السادس عشر	النهائي

### د. الدعم الطلابي:

ماء هيئة التدريس للاستشارات والإرشاد الأكاديمي للطالب	١ -تدابير تقديم أعض
الإرشاد والتوجيه الأكاديمي للطلاب	-
المحاضرة الأسبوعية يومي السبت والاثنين	-
الساعات المكتبية للاجابة على الاستفسارات،	_

### ه. مصادر التعلم:

	١ –الكتب المقررة المطلوبة: كتاب الثقافة الاسلامية (٢)
	٢ ← المراجع الرئيسة:
	١ كتاب 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 الإنترنتالخ:
	http://www.ahlalhdeeth.com/vb/index.php http://www.tafsir.net/vb/
	http://213.150.161.217/kfcris/login.htm
نظيمية الفنية: التراث	ه-مواد تعليمية أخرى مثل البرامج المعتمدة على الحاسب الآلي/الأسطوانات المدمجة، والمعايير /اللـوائح الت
	الإسلامي، أو المكتبة الشاملة.
	.7 .511 -41 11

و . المرافق اللازمة:

### **National Commission for**



الهيئة الوطنية التقويم والاعتماد الأكاديمي

المملكة العربية السعودية

١ –المباني (قاعات المحاضرات، المختبرات،الخ):
عة دراسية وعدد من الكراسي والطاولات يكفي لجميع الطلاب في المادة، مكتبة الكلية.
٢مصادر الحاسب الآلي: أجهزة حاسب آلي مرتبطة بالنت . مكتبة الكترونية ،
٣–مصادر أخرى (حددهامثل: 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:
<ul> <li>سؤال الطلاب مباشرة نهاية كل محاضرة.</li> </ul>
<ul> <li>بمقاییس الاختبارات وتقییم النتائج.</li> </ul>
<ul> <li>التقییم الفصلي عن طریق بیانات معتمدة توزع على الطلاب.</li> </ul>
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.
<ul> <li>ب- تقييم الامتحان والأسئلة المعدة للقياس والتقويم.</li> </ul>
<ul> <li>تحليل الاختبارات ومقارنة النتائج .</li> </ul>
ه—صف إجراءات التخطيط للمراجعة الدورية لمدى فعالية المقرر الدراسي والتخطيط لتطويرها:
<ol> <li>ا. تنقيح ومراجعة المقرر كل فصل دراسي.</li> </ol>
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



المملكة العربية السعودية الهيئة الوطنية الوطنية والاعتماد الأكاديمي

Course Units/Credit Hours	2	(2+0+0) C. H	
Student workload		Contact hours	Private study
	Lecture	30	30
	Assignments	0	10
	Practical	0	0
	Exams & Quizzes	5	15
	Sum	35	55
	Total Sum	90	0
Credits	3 ECTS C.Ps		

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total
Contact Hours	30	0	0	0	5	35
Credit	2	0	0	0	0	2
3. Additional	private stud	y/learning h	nours expected	of students p	er week. <b>3.67</b>	

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المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

**Academic Accreditation & Assessment** 

Course: The Holy Qur'aan (2) Code: 601201-2



المطعة العربية السعودية وزارة التعليم العالي **جامعة أم القري** كلية الدعوة وأصول الدين

اسم المقرر: القرآن الكريم (٢)

رقم المقرر: ۲۰۱

ساعات المقرر: وحدتان دراسيتان في الأسبوع

### موضوعات المنهج:

### أولاً: التلاوة:

تلاوة الربع الثالث من المصحف الشريف ( من سورة الكهف إلى نهايـة سورة فـاطر ) مع مراعـاة أحكام التجويد المقررة في الفصل الأول والتى 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 .

Faculty AL-Da'awa & Osool AL-Deen Makkah Al Mukarrumah P.O.Box ; 7040 Tel : 5563845 Fax : 5583888 كلية الدعوة وأصول الدين مكة المكرمة ص . ب : ٧٠٤٠ تليقون ه١٩٣٨٥٥ فاكس : ٨٣٨٨٥٥٥

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المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

**Academic Accreditation & Assessment** 

الــــــاريخ : ..... المشفوعات : .....



المملكة العربية السمودية. وزارة التعليم العالي جامعة أم القري كلية الدعوة وأصول الدين

### المرجع:

البرهان في تجويد القرآن لللشيخ / 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:المفظ:

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

Course Units/Credit Hours	2 (2+0+0) C. H			
Student workload		<b>Contact hours</b>	Private study	
	Lecture	30	30	
	Assignments	0	10	
	Practical	0	0	
	Exams & Quizzes	5	13	
	Sum	35	53	
	Total Sum	88	8	
Credits	3 ECTS C.Ps			

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
			or Studio		(Exams,	
					Assignments and	
					Quizzes)	
Contact	30	0	0	0	5	35
Hours						
Credit	2	0	0	0	0	2
3. Additional	3. Additional private study/learning hours expected of students per week.					

المرتد المرتد التمويز المرتد الهالية التمويز والاعتمام الأنف الرسية

الهيئة الوطنية للتقويم والاعتماد الأكاديمي

المملكة العربية السعودية

**Academic Accreditation & Assessment** 

### KINGDOM OF SAUDI ARABIA

# THE NATIONAL COMMISSION FOR ACADEMIC ACCREDITATION & ASSESSMENT

### **COURSE SPECIFICATION**

Course: Animal Physiology

Code: 4013331-3



**Academic Accreditation & Assessment** 

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمسى

## **Course Specification**

**INSTITUTION** Umm Al-Qura University

COLLEGE/DEPARTMENT Faculty Of Applied Science/Biology Department

### A COURSE IDENTIFICATION AND GENERAL INFORMATION

1. COURSE TITLE AND CODE: Animal Physiology (4013331-3)

2. CREDIT HOURS (2+1+0) Hrs

3. PROGRAM(S) IN WHICH THE COURSE IS OFFERED. Bachelor Degree In Medical Physics Program

4. NAME OF FACULTY MEMBER RESPONSIBLE FOR THE COURSE Dr. Jehane Ibrahim

5. LEVEL/YEAR AT WHICH THIS COURSE IS OFFERED 4<sup>th</sup> Level/2<sup>nd</sup> Year

6. PRE-REQUISITES FOR THIS COURSE (IF ANY) CELL BIOLOGY CODE: 4012312-2

7. CO-REQUISITES FOR THIS COURSE (IF ANY) None



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### **B** OBJECTIVES

# 1. SUMMARY OF THE MAIN LEARNING OUTCOMES FOR STUDENTS ENROLLED IN THE COURSE.

### AFTER COMPLETING THIS COURSE, STUDENTS SHOULD BE ABLE TO:

- 1. DEVELOP CRITICAL THINKING SKILLS AND BE ABLE TO APPLY PHYSIOLOGICAL CONCEPTS AND PRINCIPLES AT THE BASIC AND APPLIED LEVELS.
- 2. DEVELOP A WORKING KNOWLEDGE OF THE MAJOR PHYSIOLOGICAL SYSTEMS, AND BE ABLE TO ASSOCIATE ANATOMICAL AREAS WITH THEIR SPECIFIC FUNCTION.
- 3. DEVELOP AN UNDERSTANDING OF THE ROLE OF EVOLUTIONARY PROCESSES (E.G. NATURAL SELECTION) IN DRIVING THE ORGANIZATION OF PHYSIOLOGICAL SYSTEMS.
- 4. UNDERSTAND IMPORTANT PHYSIOLOGICAL CHALLENGES ANIMALS FACE, HOW THOSE CHALLENGES VARY IN RELATION TO THE ANIMALS' ENVIRONMENT, AND THE PROCESSES BY WHICH ANIMALS DEAL WITH THESE CHALLENGES.
- 5. IDENTIFY AND DESCRIBE STRUCTURAL DIFFERENCES OF MAJOR PHYSIOLOGICAL SYSTEMS THAT CHARACTERIZE DIFFERENT TAXONOMIC GROUPS OF ANIMALS.
- 6. RELATE PHYSIOLOGICAL PROCESSES, FROM THE BIOCHEMICAL TO THE SYSTEM LEVEL, TO THE FUNCTION OF THE ENTIRE ORGANISM IN ITS ENVIRONMENT.
- 7. DEVELOP AN UNDERSTANDING OF CURRENT RESEARCH TOPICS IN ANIMAL PHYSIOLOGY USING THE PRIMARY LITERATURE AND TO DEVELOP RESEARCH QUESTIONS AND METHODOLOGY TO ADDRESS THESE QUESTIONS.
- 8. DEVELOP RESEARCH QUESTIONS, DEVISE METHODS TO ANSWER THESE QUESTIONS, APPLY APPROPRIATE STATISTICAL TESTS TO ANALYZE DATA AND PRESENT RESULTS OF GRAPHICALLY, THROUGH WRITING AND BY OTHER MEANS.
- 9. LEARN TO PROPERLY AND SAFELY USE ANIMALS AND MODERN LABORATORY EQUIPMENT TO CONDUCT PHYSIOLOGICAL RESEARCH.

# 2. Briefly describe any plans for developing and improving the course that are being implemented.

- Annual review of course by departmental course planning committee.
- Annual review and updating practical sessions with new experiments, slides and new preparations.
- Comparison of course topics with equivalent local and international courses.
- Class meetings consisted of lectures by the instructor, combined with audio-visual materials related to the lectures topics.
- Electronic materials have been utilized to support the lecture course material.
- Utilizing of recent research published in scientific journals.
- The course material was posted on the Website that could be accessed by the students enrolled in the course only.
- Improve the course contents according to the recent Text Book.

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



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Торіс	No of	Contact
	Weeks	hours
Definitions, physiology of cell membrane, feedback mechanism and haemeostasis	2	4
Structure and function of digestive system, mechanism of digestion, absorbtion and role of enzymes in digestion and metabolism.	3	6
Mechanisms of respiration, exchange of gases, mechanism of Inspiration and exhalation	3	6
Circulation, systemic and pulmonary circulations, blood cellular elements, heart sounds and lymph	2	4
Nervous System, central nervous system, peripheral nervous system, Autonomic nervous system (Sympathetic and parasympathetic divisions),	2	4

Course Units/Credit Hours	3 (3+0+0) C. H				
Student workload		<b>Contact hours</b>	Private study		
	Lecture	30	30		
	Assignments	0	15		
	Practical	28	14		
	Exams & Quizzes	8	20		
	Sum	66	79		
	Total Sum	14	15		
Credits	<b>5</b> ECTS C.Ps				

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total
Contact Hours	45	0	0	0	5	50
Credit	2	0	0	0	0	2
3. Additional	3. Additional private study/learning hours expected of students per week.					



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

### a. Knowledge

### (i) Description of the knowledge to be acquired

- Student should know how haemostasis occurs and how materials digested, absorbed and cross cell membrane
- Student should understand how blood circulates and how gases are exchanged
- Student should understand the main function of central and peripheral nervous system

### (ii) Teaching strategies to be used to develop that knowledge

- In-class lecturing where the previous knowledge is linked to the current and future topics.
- Homework assignments
- Discussions (connecting what they learn in the class and applying this information in laboratory).
- Handout of lecture notes for each topic.

### (iii) Methods of assessment of knowledge acquired

- Homework and Quizzes
- Midterm and final written exams (theoretical and practical)
- Evaluation of reports
- Oral presentation
- Course work reports

### b. Cognitive Skills

- (i) Cognitive skills to be developed
  - The ability to:
    - 1. Understanding the physiological basis of cell membrane function.
    - 2. Understanding haemeostasis.

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### **Academic Accreditation & Assessment**

- 3. To use computer and internet.
- 4. To describe the disorders arise after any organ injury.
- 5. To identify some factors affecting on the biological processes inside living organisms.
- 6. To know anatomical characteristics of living organisms.
- 7. To prepare some physiological experiments.
- 8. To recognize an overview of the tissues anatomy.
- 9. To refer different organs of different systems.
- 10. To dissect experimental animals, and identify various systems.
- 11. Microscopic examination to differentiate between different organs.
- 12. Recognising physiological changes.
- (ii) Teaching strategies to be used to develop these cognitive skills
  - 1. Application of essential scientific techniques through lectures, classes and essays.
  - 2. Small group discussion
  - 3. Ask the students to make small search project during the semester
  - 4. Making connections between different topics across the course.
  - 5. Class discussions (Engage students in interaction with questions and answers).
  - 6. Homework assignments
  - 7. Use of microscopic illustrations.
  - 8. Laboratory training.
  - 9. Activities and homework.
- (iii) Methods of assessment of students cognitive skills
  - 1. Course work reports
  - 2. Evaluation of the topics prepared by students according to the content, arrangement, and covering of the topic.
  - 3. Midterm and final exams
  - 4. Checking the homework assignments

### c. Interpersonal Skills and Responsibility

- (i) Description of the interpersonal skills and capacity to carry responsibility to be developed
  - 1. Developing oral presentations
  - 2. Communicating personal ideas and thoughts.
  - 3. Work independently and as part of a team to finish some assignments.
  - 4. Communicate results of work to others.
- (ii) Teaching strategies to be used to develop these skills and abilities
  - 1. Engage student in carrying out internet search.
  - 2. The ability to debate the scientific basis of physiological mechanisms of body systems
  - 3. Writing group reports
  - 4. Solving problems in groups during tutorial
  - 5. Checking the homework assignments in groups during discussion
  - 6. Cooperative learning and application of scientific method in thinking the scientific problem solving.
  - 7. Work as part of a team.



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- 8. Conducting group experiments and writing group reports.
- 9. Dividing students into groups to cooperate with each other during the experiments.
- (iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility
  - 1. Oral exams.
  - 2. Evaluation of student essays assignments and search work.
  - 3. Observation of student ethical and moral behaviour.
  - 4. Students' attendance is recorded during lectures.
  - 5. Assessment of the student reports.
  - 6. Grading homework assignments.

### d. Communication, Information Technology and Numerical Skills

- (i) Description of the skills to be developed in this domain.
  - 1. Use information and communication technology.
  - 2. Use IT and communication technology in gathering and interpreting information and ideas.
  - 3. Use the internet as a means of communication and a source of information.
  - 4. Encourage students to use internet for searching certain electronic journals regarding topics of the course.
  - 5. Scientific writing.
  - 6. Use his/her observations to solve problems.
  - 7. Doing research and conduct searches for restoring information.
  - 8. Able to calculate and discuss the facts and logical propose methods to solve the difficulties.
- (ii) Teaching strategies to be used to develop these skills
  - 1. Oral presentations.
  - 2. Internet search assignments and essays.
  - 3. Incorporating the use and utilization of computer in the course requirements.
  - 4. Students will be asked for delivering a summary regarding certain topics related to the course.
- (iii) Methods of assessment of students numerical and communication skills
  - 1. Evaluation of student essays and assignments.
  - 2. Evaluating the laboratory written reports.
  - 3. Marks given to for good reports and presentations
  - 4. Evaluating during the discussion in lecture and reports. Part of the grad is put for student's written participation.

### e. Psychomotor Skills (if applicable)

- (i) Description of the psychomotor skills to be developed and the level of performance required
  - To examine and describe some tissues under the microscope



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- To draw some examples of human systems.
- To examine models of organs and systems.
- To dissect some examples of animals.
- To use computers and internet.
- To contribute in the awareness programs that aim to take advantage of the wealth of animal and how to use them economically
- (ii) Teaching strategies to be used to develop these skills
  - Using of microscopic illustrations.
  - Laboratory exercises and anatomy.
  - Activities and homework.
  - Preparing researches.
  - Community participation.
- (iii) Methods of assessment of students psychomotor skills
  - Evaluating the laboratory written reports.

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Mark	100%		



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### **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)
  - Two hours office per week

### **E Learning Resources**

1. Required Text(s):

No textbook is designated. Course materials will be based on a combination of lecture notes, handouts, journal articles and various references. Following is a list of suggested (yet not required) references that you would further read as class topic(s) evolves.

### Recommended Books:

- Animal Physiology, Second Edition, Richard W. Hill, Gordon A. Wyse, and Margaret Anderson, 2008
- 2. Gerard, et al., (2008). Principles of Anatomy and Physiology John Wiley & Sons Inc., USA.
- 2. Essential References

Stuart I Fox (2010) Human Physiology, Kindle Edition, McGraw-Hill, USA

- 3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)
  - 1. Lauralee Sherwood, Hillar Klandorf, Paul Yancey (2012) Animal Physiology: From Genes to Organisms, Brooks Cole, USA.
  - 2. Gerard, et al., (2008). Principles of Anatomy and Physiology John Wiley & Sons Inc., USA.
- 4-. Electronic Materials, Web Sites etc

https://www.coursera.org/learn/physiology

https://www.edx.org

- 5- Other learning material such as computer-based programs/CD, professional standards/regulations
- Microsoft office package.
- Multi- media associated with the text book and the relevant websites

### 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.)
- Lecture room suitable for 35 students.
- Lecture room equipped with a black board and Data show. Instructors use their own laptop
- Good Physiology lab



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- 2. Computing resources
- Computers or internet connection.
- Active Board
- Data show is required in every room
- 3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)
- Laboratory Instruments & Equipment: Spectrophotometer, Centrifuge, PH Meter, Flasks, Beakers, Screw Capped Tubes, Slides And Tips And Chemicals Kits

### **G** Course Evaluation and Improvement Processes

- 1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching
- Course evaluation by student
- Students- faculty meetings
- 2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department
- Peer consultation on teaching
- Departmental council discussions
- Discussions within the group of faculty teaching the course
- 3 Processes for Improvement of Teaching
- Undergraduate Committee will review deficiencies based on the student evaluation, faculty input, course file, and program assessment.
- Feedback from employers and alumni surveys and graduating students' input are used to identify
  any deficiencies in students' ability in applying knowledge of properties and the use of structural
  materials.
- Organize workshop on effective teaching methods to enable instructors to improve their teaching skills.
- Teaching method will focus on students' learning and on course learning outcomes.
- 4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution)
- Undergraduate Committee will review samples of student work in this course to check on the standard of grades and achievements.
- A faculty member from a reputable university will evaluate the course material and the students' work to compare the standard of grades and achievements with those at his university.
- Periodic exchange and remarking of tests with staff at another institution.
- 5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
- Continuous evaluation of the students during the term
- The course material and learning outcomes are periodically reviewed and the changes to be taken are approved in the departmental and higher councils.
- The head of department and faculty take the responsibility of implementing the proposed change.



الهيئة الوطنية للتقويم والاعتماد الأكاديمي

المملكة العربية السعودية

**Academic Accreditation & Assessment** 





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



T6. Course Specifications (CS)



Course title: Modern Physics



Course code: 4032150-4



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### **Course Specifications**

Institution: Umm AL – Qura Universit	<b>y</b>	Date: 18/1/1439	
College/Department : College of Applie	d Science	- Department of Ph	ysics
A. Course Identification and General I	nformatio	on	
1. Course title and code: Modern Physic	ics (Cod	e: 4032150-4)	
2. Credit hours: 4 (3+3+0) Hrs			
3. Program(s) in which the course is off (If general elective available in many pro		•	list programs)
	e academi	c staff member	
5. Level/year at which this course is off	ered: 4 <sup>th</sup> L	evel / Second year	
6. Pre-requisites for this course (if any):	;		
7. Co-requisites for this course (if any):			
8. Location if not on main campus: Mai	in campus	and Alzaher	
9. Mode of Instruction (mark all that ap	ply)		
a. traditional classroom	<b>✓</b>	What percentage?	100%
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments:			



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### **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
<b>❖ THE SPATIAL THEORY OF THE RELATIVITY</b>	3	3
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,		
11- Mass,		
12- Energy,		
13- transformation of energy,		
14- Momentum and force,		



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	<ul><li>15- Doppler effect,</li><li>16- Relativistic collisions.</li></ul>		
*	<ul> <li>BLACK BODY RADIATION</li> <li>radiation of heated objects,</li> <li>thermal radiation,</li> <li>cavity radiation treated with classical physics,</li> <li>UV catastrophe,</li> <li>Planck's solution,</li> <li>quantum of energy.</li> </ul>	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

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- 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

Stefan-Boltzmann's law

Course Unit/Credit hours	4 (3+1+0) C. H					
		Contact hours	Private study			
	Lecture	45	60			
Student workload	Practical	42	20			
Student workload	Assignments	0	15			
	Exams & Quizzes	8	20			
	Sum	95	115			
	Total Sum:		210			
Credit	7 ECTS C.Ps					

2. Course components (total contact hours and credits per semester):							
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total	
Contact Hours	45	0	0	42	8	95	
Credit	3	0	0	1	0	4	

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

7.67

# . 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



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learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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 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 physics	<ol> <li>Demonstrating the basic principle of the experiment.</li> <li>Show the best ways to perform the experiments</li> <li>Show the best ways to demonstrate the results.</li> <li>Show the best way to write the reports about the experiment.</li> <li>Discussion with the student about the results.</li> </ol>	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 physics.	Preparing main outlines for teaching	1.Midterm's exam. Exams, short quizzes
2.2	Solve problems in Physics by using suitable mathematical principles	2.Following some proofs 3.Define duties for each chapter 4.Encourage the student to look	2.Asking about physical laws previously taught 3.Writing reports on
2.3	Analyse and interpret quantitative results	for the information in different	selected parts of the
2.4	Express the physical phenomena mathematically.	references 5.Ask the student to attend lectures for practice solving problem	course 4.Discussions of how to simplify or analyze some phenomena
3.0	Interpersonal Skills & Respon	sibility	

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

•	5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)								LO #s									
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	3.3	3.4	4.1	4.2	4.3	4.4	5.1	5.2
1.1		✓																
1.2			✓															
2.1				✓														
2.2						✓												
2.3							✓											
2.4						✓												
3.1									✓									
3.2										✓								
4.1													✓					
4.2														✓				
4.3															✓			
4.4																✓		
5.1																	<b>✓</b>	

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Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment		
1	Periodical Exam (s)	4	15 min	10 %		
2	Mid Term Exam (Theoretic)	8	60 min	20 %		
3	Mid Term Exam (practical)	9	30 min	10 %		
4	Reports and essay	11		5 %		
5	Final Practical Exam	15	60 min	15 %		
6	Final Exam	16	120 min	40 %		
	Total Mark	<u> </u>		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)

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.



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- 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 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.



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- 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:A. TIMOUMI	
Signature:	Date Report Completed:
Name of Field Experience Teaching Staff	
Program Coordinator:Dr. Fahd Al-I	Hashmi
Signature: Jahd Al-Hashmi	Date Received: 23/4/1439

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



Course Specifications (CS)



Program: Medical Physics

Course title: Biomechanics



Course Coordinator: Hosam I. Salaheldin



Course code: 4032293-3



This form Compatible with NCAAA 2013 Edition



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## **Course Specifications**

		391-1	
Credit hours: 3 (3+0+0) Hrs			
Program(s) in which the course is of general elective available in many pr		,	·
Course Language: English			
Name of faculty member responsible			
Level/year at which this course is of		ldin Ibrahim l 6 / 3 <sup>th</sup> Year	
Prerequisites for this course (if any):	Fundame	ntal of Medical Physi	ics (4032280-4)
Co-requisites for this course (if any):			
Location, if not on the main campus:	Main can	npus (Abdeia) and Al	zaher campus
O. Mode of Instruction (mark all that a	apply)		
A. Traditional classroom	V	What percentage?	80%
B. Blended (traditional and online)	V	What percentage?	20%
C. E-learning		What percentage?	
D. Correspondence		What percentage?	
F. Other		What percentage?	



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1. 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:

#### For students undertaking this course, the aims are to:

- 1. Static Forces
- 2. Friction For The Human Body
- 3. Translational Motion For The Human Body
- 4. Angular Motion For The Human Body
- 5. Elasticity And Strength Of Materials.
- 6. Insect Flight.
- 7. Fluids
- 8. The Motion Of Fluids In Human Body
- 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 physical laws, principles and the associated proofs.
  - 3. Highlighting the day life applications whenever exist.
  - 4. Encourage the students to see more details in the international websites 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 the Bulletin or handbook)

#### Course Description:

1 Topi	1 Topics to be Covered								
	Topics	No of Weeks	Contact hours						
	Chapter 1: Static Forces	3	9						
1.1	Equilibrium and Stability								
1.2	Equilibrium Considerations for the Human Body								
1.3	1.3 Stability of the Human Body under the Action of an External								
Force									



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1.4 Skeletal Muscles		
1.5 Levers		
1.6 The Elbow		
1.7 The Hip		
Exercises:		
1.7.1 Limping		
1.8 The Back		
Quiz 1		
Quiz 2		
Chapter 2: Friction	1	3
Introduction		
Types of friction		
2.1 Standing at an Incline		
2.2 Friction at the Hip Joint		
Solved problems		
Quiz 1		
Chapter 3: Elasticity and Strength of Materials	3	9
Elasticity		
1. Introduction		
Elasticity		
Elastic materials		
Hook's Law		
Elastic modulus		
2. Types of stress and strain		
2.1 Tensile and compressive stress and strain		
a.Tensile stress		
b. Compressive stress		
Young's modulus Y		
i-Shear stress		
ii-Shear strain		
iii-Shear modulus S		
c. Volume stress (the pressure) and strain		
Volume strain.		
Structural Determinants of Compliance		
The difference between the Compliance of vein and artery.		
The pressure – volume graph of the vein and artery.		
First Class Test Exam		



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Charter A. Dere Merker		
Chapter 4: Bone Mechanics		
Elasticity and plasticity The stress-strain diagram for the ductile material		
The proportional limit		
Ductile materials		
Brittle materials		
Elastic hysteresis.		
Breaking stress		
Physics of Bone		
Types of Bone		
Composition of bone		
Mechanical properties		
Properties of bone	3	9
Compressive and tensile loading of cancellous bone.		
Factors affecting strength.		
Mechanical Properties of Living Tissues:		
Material Mechanical Properties		
Structural Mechanical Properties		
• What are the factors affecting the stress bearing capacities of the		
bone?		
Stiffness and Resilience		
Stiffness vs Strength		
The stress-strain diagram for the ductile material compared to the		
brittle material and the human bone.		
<ul> <li>Comparsione between the behavior of bone with other solid</li> </ul>		
materials (glass & metal)?		
<ul> <li>Mechanical Loading of Bone.</li> </ul>		
The Bone fracture Mechanics.		
• (1) Tensile Loading.		
• (2) Compressive Loading.		
• (3) Shear Loading.		
• (4) Bending Loading.		
• (5) Torsional Loading.		
<ul> <li>Combined bending &amp; axial load</li> </ul>		
• What are the advantages of trabecular bone over compact bone?		
Physical Properties of compact bone:		
• The density.		
• Elasticity.		
• Strength		
Bone Tissue Characteristics:		
Homogenous Vs non-homogenous		
<ul> <li>Viscoelasticity</li> </ul>		
Isotropic Vs Anisotropic		
ı		



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Factors Affecting Stress - Strain Diagram		
Effect of Loading Rate.		
Effect of Loading Direction.		
Effect of Loading Type.		
Factors Affecting Strength of The Bone		
• Area		
Reduction in density		
Stress Concentration		
Solved problems		
Second Class Test Exam		
Chapter 5: The Motion of Fluids  5.1. Bernoulli's Equation  5.2 Viscosity and Poiseuille's Law  5.3 Turbulent Flow  5.4. Circulation of the Blood  5.5 Blood Pressure  5.6 Control of Blood Flow  5.7 Energetics of Blood Flow  5.8. Turbulence in the Blood  5.9. Arteriosclerosis and Blood Flow  5.10 Powers Produced by the Heart  5.11 Measurement of Blood Pressure  Solved problems  Exercises:  5-1,5-2, 5-3, 5-4, 5-5.  Quiz 1  Quiz 2  Quiz 3	3	9
Quiz 3	15	45 hr
	weeks	



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Course Units/Credit Hours		(3+1+0) C. H			
		<b>Contact hours</b>	Private study		
	Lecture	45	60		
	Assignments	0	15		
Student workload	Practical	0	0		
	Exams & Quizzes	8	20		
	Sum	53	95		
	Total Sum	14	8		
Credits	5 ECTS C.Ps				

2. Course components (total contact hours and credits per semester):											
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total					
Contact Hours	45	0	0	0	8	53					
Credit	3	0	0	0	0	3					
3. Additional private study/learning hours expected of students per week.  6.33											

# **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).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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	Course Teaching	Course Assessment
#	And Course Learning	Strategies	Methods
	Outcomes		

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1.0	Knowledge		
1.0	At the end of this course to Define the basic knowledge of the biomechanics and the related laws  Outline different application of biomechanics and the application on the human body movement.	- 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.	<ul> <li>Graded homework.</li> <li>Assignments.</li> <li>Quizzes.</li> <li>Oral Group Discussion.</li> <li>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.</li> <li>Multiple choice knowledge item on final exam</li> </ul>
2.0 2.1 2.2	Cognitive Skills  At the end of this course to Summarize general areas of human movement and their applications  Apply the mechanics laws to the human different biological systems.	<ul> <li>Explain and justify several unsolved examples and unsolved problems in lecture under the supervision of the instructor.</li> <li>Encourage the students to analyze and enhance the medical images using certain image processing program packages (e.g. MATLAB, Image J software).</li> </ul>	<ul> <li>Graded homework.</li> <li>Class exams.</li> <li>Final Exam.</li> <li>Group and individual assignments require application of analytical tools in problem solving tasks.</li> <li>Class participation.</li> </ul>
3.0 3.1 3.2	Interpersonal Skills & R At the end of this course to Work effectively in groups as well as individuals.  Justify a short report in a written form and/or orally using appropriate scientific language.	esponsibility the student should be able to:  - 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.	<ul> <li>Evaluation of group reports and individual contribution within the group.</li> <li>Peer or self assessment.</li> <li>Evaluation of the capacity for independent study which could be assessed in individual assignments.</li> </ul>



#### 6. Schedule of Assessment Tasks for Students During the Semester

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Assessment task (eg. essay, test, group

Week due

Exam

**Proportion of Final** 

4.0		ation Technology, Numerical the student should be able to:	
4.2	Illustrate information technology and modern computer tools to locate and retrieve scientific information relevant to computing in medicine.  Appraise the cooperation through teamwork to assess and criticize various emergent problems.  Interpret the defined noise and artifacts an in the medical images to be improved using different signal and/or image processing package.	<ul> <li>Essay questions</li> <li>Group presentation</li> <li>Encouraging assays, reports and presentations.</li> <li>Encourage the student to use the modern Information and Communication</li> <li>Technology (ICT) tools to prepare the required essays, reports, and/or projects.</li> <li>Also, the students should conduct the ideal proper style and referencing format as specified in</li> </ul>	<ul> <li>Assessments of student's assignments.</li> <li>Evaluation of group reports and individual contribution within the group.</li> <li>Reports and presentations.</li> <li>Instructor's feedback</li> <li>Final and short exams include different problems which need numerical and technical skills.</li> </ul>
5.0	Psychomotor	college style manual.	
5.1	Not applicable (N/A)	N/A	N/A

Course LOs #		lap co		LOs w	vith th	ne pro	gram	LOs.	(Place	cour	se LO	#s in	the le	ft col	umn	and	prog	ram	LO
	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1
1.1	✓			✓															
1.2		✓		✓															
2.1							✓		✓	✓									
2.2									✓	✓									
3.1											✓		✓						
3.2													✓	✓					
4.1															✓		✓		
4.2																✓	✓		
4.3																		✓	
5.1																			



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	project, examination etc.)		duration	Assessment		
1	Periodical Exam (s)	4	15 min	10 %		
2	Mid Term Exam (Theoretic)	8	60 min	30 %		
3	Mid Term Exam (practical)					
4	Reports and essay	11		20 %		
5	Final Practical Exam					
6	Final Exam	16	120 min	40 %		
	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)

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) Physics in Medicine And Biology, Third Edition, Paul Davidovits,, Elsevier Inc, 2008.
- 2) Intermediate Physics for Medicine and Biology, Fourth Edition, Russell K. Hobbie, Bradley J. Roth, Springer Science & Business Media, LLC, 2007.
- 3) Medical Physics and Biomedical Engineering, B H Brown, R H Smallwood, D C Barber, P V Lawford and D R Hose, IOP Publishing Ltd 1999.
- 4) Handbook of Physics In Medicine And Biology, Robert Splinter, Taylor and Francis Group, LLC, 2010.
- 2. List Essential References Materials (Journals, Reports, .....etc.)



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- 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 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
- 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
  - 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



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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 Te	eaching Staff	
Program Coordinator:		
Name of Field Experience Te	eaching Staff	
Program Coordinator:	Dr. Fahd Al-Hashmi	
Signature: Jahd Al-Hashmi	Date Received: 23/4/1439	

المبتد الهال بنية التقوير المبتد الهال بنية التقوير والإغترال إلى الحاويري

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### **Level Five**

Radiation Medical Physics (1) 4033285-4

Quantum Mechanics (1) 4033145-4

**Islamic culture (3) 601301-3** 

Physics of Cell membrane and macromolecules 4033298-2

Physics of Medical Laser 4033281-2

Physics of Medical Ultrasound 4033290-2



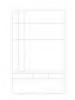
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# Kingdom of Saudi Arabia The National Commission for Academic Accreditation & Assessment





Course Specifications (CS)



Program: Medical Physics





Course Coordinator: Dr. Taha Alfawwal



Course code: 4033285-4



This form Compatible with NCAAA 2013 Edition



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## **Course Specifications**

Institution: Umm AL – Qura Universit	ty	Date: 17/4/1439	
College/Department : College of Applie	ed Science	– Department of Ph	ysics
A. Course Identification and General l	nformatio	n	
Course title and code: Medical Radi	ation Phys	ics 1 (Code: 403328	5-4)
2. Credit hours: <b>4 (3+1+0) Hrs</b>			
3. Program(s) in which the course is of		•	1' .
(If general elective available in many pr 4. Name of faculty member responsible			list programs)
D	r. Taha Alf	awwal	
5. Level/year at which this course is of	ered: 3 <sup>rd</sup> Y	ear/Level 5	
6. Pre-requisites for this course (if any)	: Fundame	ntal of Medical Phy	rsics (4032280-4)
8. Location if not on main campus: <b>Macampus</b> .	in male cai	mpus (Abdeia) and .	Alzaher female
9. Mode of Instruction (mark all that ap	ply)		
a. traditional classroom	<b>✓</b>	What percentage?	80%
b. blended (traditional and online)	<b>✓</b>	What percentage?	20%
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	
Comments:			
The mode of instruction is distributed and blended (traditional and online)].	l used two it	ems [Traditional class	room with 80%, and 20%
B Objectives			



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- 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, beta charged particles, gamma ray and neutrons with Matter.
- State different types of personnel detectors
- Outline of the scintillation detectors
- 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 of alpha, beta charged particles, gamma ray and neutrons with Matter., quantities and units in radiological physics. Moreover, this course is interested in study the types of radiation Sources; radioactivity, Transformation mechanisms, and transformation Kinetics. It interested in explaining machine sources of radiation such as x-ray tube, linear accelerator and cyclotron. It gives outline of the types personnel detectors, scintillation detectors, and explains biological effects in humans and outline on radiation protection for occupational workers in medical practices such as diagnostic x-ray, nuclear medicine and radiotherapy.

1 Topics to be Covered							
Topics	No of Weeks	Contact hours					
Introduction to medical radiation physics Scientific Fundamental , Excitation and Ionization Characteristic x-ray. Binding Energy	1	3 hrs					
Radiation Sources Radioactivity.  Transformation Mechanisms: Alpha emission, Isobaric transitions: Beta emission, Positron emission and electron capture. Isomeric transitions:	3	9 hrs					
Gamma rays and X-ray. Transformation Kinetics	1	3 hrs					



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Naturally Occurring Radiation, cosmic radiation, cosmogenic radioactivity and primordial radioactivity.	2	6 hrs
Machine sources of radiation such as  X Rays tube  Linear Accelerator  Cyclotron  1st class Test	2	6 hrs
Interaction of radiation with matter Alpha particle interactions, Beta particle interactions Specific ionization, Mass stopping power  Linear energy transfer, Bremsstrahlung, X-ray production, Internal Conversion Electrons, gamma rays, expoentional absorption, half value layer and tenth value layer	3	9 hrs
Interaction of gamma radiation with matter  Pair production, Compton scattering and photoelectric absorption, photonuclear reaction and combined effect.  Interaction of neutrons with matter  Production, classification, interaction, scattering, absorption and neutron activation	1	3 hrs
Radiation quantities and units  Biological effect in Humans: non stochastic effects and stochastic effects.  Radiation protection concepts and principles  Radiation Protection for occupational workers.  2 <sup>nd</sup> Class Test Exam	2	6 hrs
	15 weeks	45 hrs

### **Practical part:**

- 1.Calibration of Thermo Luminescent Dosimeters
- 1.1 Determination of Element Correction Coefficient
- 1.2 Determination of Reader Calibration Factor
- 1.3 Assessment of personal dose equivalent
- 2.1 Determination of half value layer
- 2.2 Determination linear attenuation coefficients for different materials
- 3 verifications of inverse square law
- 4 Environmental monitoring for some selected locations



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- 5 Detection of gamma rays using a scintillation counter
- 5.1 Energy calibration of NaI(TI) detector
- 5.2 Resolution of NaI (TI) detector
- 5.3 Measurements of Natural background radiation in some environmental samples
- 5.4 Assessment of activity of I-131 using neck and thyroid Phantom

Course Units/Credit Hours	4	(3+1+0) C. H		
		Contact hours	Private study	
	Lecture	45	60	
	Assignments	0	12	
Student workload	Practical	42	20	
	Exams & Quizzes	7	19	
	Sum	94	112	
	Total Sum	205		
Credits	<b>7</b> ECTS C.Ps			

2. Course components (total contact hours and credits per semester):  Lecture Tutorial Laboratory or Studio Practical Other: (Exams, Assignments and Quizzes)											
Contact Hours	45	0	0	42	7	94					
Credit	3	0	0	1	0	4					
3. Additional private study/learning hours expected of students per week. 7.73											

# **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

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learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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	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.	<ul> <li>Home work</li> <li>Interactive discussion</li> <li>Short exam1</li> <li>Short exam2</li> <li>Final exam</li> </ul>				
1.3	Describe types of radiation Sources; Radioactivity, Transformation Mechanisms, Transformation Kinetics  Define Interactions of ionizing radiation with Matter by studying the:-  1- Interactions of alpha and beta charged particles with Matter 2- Interactions of gamma and uncharged particles with Matter	Describing types of radiation sources with solving problems  Select suitable Showing power point presentation for explanation the interaction of radiation with matter	1 Oral questions 2.Presentations 3 .Quizzes 4. Problem solving  1 Oral questions 2. Presentations 3 .Quizzes 4. Problem solving  1 Oral questions 2. Presentations 3 .Quizzes 4. Problem solving  4. Problem solving				
1.4	Reproduce of X Rays: Accelerated Charged Particle, Linear Accelerator and X-ray machines.						
1.5	Outlines on the Radiation quantities and units , personnel dosimeters ,	Manage the practical experiments.	1 Oral questions 2. Presentations 3 .Quizzes 4. Problem solving				



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	biological effects in humans and radiation protection for occupational workers in medical practices		
2.0	Cognitive Skills		
2.1	Creating practical experiments for measurements radiation doses using thermoluminscence dosimeters	• Lectures	Exam must contain questions that can measure these skills.
2.2	. Applying the mathematical calculation of the radiation doses using mathematical and computer software	<ul><li>Brain storming</li><li>-Discussion</li></ul>	<ul><li> Quiz and exams</li><li> Discussions after the lecture</li></ul>
3.0	Interpersonal Skills & Respon	sibility	
3.1	At the end of the course, the student will be able to: 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	Analyse obtained data and how to manage it.	Case Study - Active learning -	Evaluate the scientific values of reports. Evaluate the work in team
	. 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	<b>Communication, Information</b>	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	Seminars presentation	Evaluation of reports
4.3	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



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Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment			
1	Periodical Exam (s)	4	15 min	10 %		
2	Mid Term Exam (Theoretic)	8	60 min	20 %		
3	Mid Term Exam (practical)	9	30 min	10 %		
4	Reports and essay	11		5 %		
5	Final Practical Exam	15	60 min	15 %		
6	Final Exam	16	120 min	40 %		
	Total Mark	100%				

5. M		urse	LOs w	ith th	ne pro	ogram	ı LOs.	(Plac	e cou	rse L	O #s iı	n the	left c	olumı	n and	prog	ram L	O #s a	across
Course LOs #					(Use	e Prog	ram L		_	Learr rovide	_			Speci	ficatio	ons)			
	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1
1.1	✓		✓																
1.2			✓		✓	✓													
1.3	✓	✓		✓															
2.1							✓	✓	✓		✓								
2.2							<b>√</b>				✓								
2.3									✓										
2.4								✓	✓		✓								
2.5							✓												
3.1												✓	✓						
3.2												✓	✓						
4.1																✓	✓		
4.2																✓	✓		
4.3																	✓		
4.4																✓			
5.1																			

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#### 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" 4<sup>th</sup> Ed. McGraw-Hill 2009.
- 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.)
  - 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



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- 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.
  - 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: Dr. Ta	ha Alfawwal
Signature:	Date Report Completed: 23/4/1439
Program Coordinator: <b>Dr.</b>	Fahd Al-Hashmi
Signature: <b>Jahd Al-Hashmi</b>	Date Received: 23/4/1439



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



T6. Course Specifications (CS)



Course title: Quantum Mechanics 1



Course code: 4033145-4



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## **Course Specifications**

Institution: Umm AL – Qura Universit	<b>y</b>	Date: 18/1/1439			
College/Department : College of Applie	ed Science	- Department of Ph	ysics		
A. Course Identification and General Information					
1. Course title and code: Quantum Me	chanics 1	(Code: 4033145)			
2. Credit hours: <b>4 (4+0+0) Hrs</b>					
3. Program(s) in which the course is offered. <b>B.Sc Medical Physics</b> (If general elective available in many programs indicate this rather than list programs)					
4. Name of faculty member responsible  One of the		urse c staff member			
5. Level/year at which this course is off					
6. Pre-requisites for this course (if any):	Theoretic	cal Methods in Physi	ics (1) (4032141-4)		
7. Co-requisites for this course (if any):					
8. Location if not on main campus: Mai		and Alzaher			
9. Mode of Instruction (mark all that ap	ply)				
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:					



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### Academic Accreditation & Assessment

#### **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:

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



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#### **Academic Accreditation & Assessment**

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.

Topics	No of Weeks	Contac hours
<ul> <li>Wave Particle Duality, Probability, and the Schrodinger Equation</li> <li>Radiation as Particles, Electrons as Waves.</li> <li>Plane Waves and Wavepackets.</li> <li>The Probability Interpretation of the Wavefunction.</li> <li>The Schrodinger Equation.</li> <li>The Heisenberg Uncertainty Relations.</li> <li>The Probability Current.</li> <li>Expectation Values and the Momentum in Wave Mechanics; The Momentum in Wave Mechanics, Wavefunction in Momentum Space.</li> </ul>	2	8
<ul> <li>Eigenvalues, Eigenfunctions, and the Expansion Postulate</li> <li>The Time-Independent Schrodinger Equation.</li> <li>Eigenvalue Equations.</li> <li>The Eigenvalue Problem for a Particle in a Box.</li> <li>The Expansion Postulate and Its Physical Interpretation.</li> <li>Momentum Eigenfunctions and the Free Particle; Normalization of the Free Particle Wave Function, Degeneracy.</li> <li>Parity.</li> </ul>	2	8
<ul> <li>One-Dimensional Potentials</li> <li>The Potential Step.</li> <li>The Potential Well.</li> <li>The Potential Barrier.</li> <li>An Example of Tunneling.</li> <li>Bound States in a Potential Well.</li> <li>The Harmonic Oscillator.</li> </ul>	2	8
<ul> <li>The General Structure of Wave Mechanics</li> <li>Eigenfunctions and Eigenvalues; The Hamiltonian Operator.</li> <li>Other Observables.</li> <li>Vector Spaces and Operators.</li> <li>Degeneracy and Simultaneous Observables.</li> <li>Time Dependence and the Classical Limit.</li> </ul>	2	8



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

	1	4
<b>❖</b> Angular Momentum		
The Angular Momentum Commutation Relations.		
<ul> <li>Raising and Lowering Operators for Angular Momentum.</li> </ul>		
• Representation of $ \lambda, \mathbf{m}\rangle$ States in Spherical Coordinates.		
	2	8
<b>*</b> The Schrodinger Equation in Three Dimensions and the Hydrogen		
Atom		
• The Central Potential.		
• The Hydrogen Atom.		
The Energy Spectrum.		
The Free Particle.		
❖ Spin	1.5	6
• Eigenstates of Spin 1/2.		
<ul> <li>The Intrinstic Magnetic Moment of Spin 1/2 Particles.</li> </ul>		
<ul> <li>Addition of Two Spins.</li> </ul>		
• The Addition of Spin 1/2 and Orbital Angular Momentum.		
General Rules for Addition of Angular Momenta.		
<b>❖</b> Matrix Representation of Operators	1.5	6
Matrices in Quantum Mechanics.		
Matrix Representation of Angular Momentum Operators.		
General Relations in Marix Mechanics.		
• Matrix Representation of Spin 1/2.		
	14 weeks	<b>56</b> l

Course Units/Credit Hours	4	(4+0+0) C. H		
		Contact hours	Private study	
	Lecture	60	105	
	Assignments	0	15	
Student workload	Practical	0	0	
	Exams & Quizzes	8	20	
	Sum	68	140	
	Total Sum	20	208	
Credits	<b>7</b> ECTS C.Ps			



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total
Contact Hours	45	0	0	42	7	94
Credit	3	0	0	1	0	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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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.)

de #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Define the nature and operations of quantum mechanics.	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	Solve some example during the lecture. Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) E) Discussions during the lectures.



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

		idea and the benefit of it.	F) Home work. G) Discussions during the class.			
1.2	Describe familiarity with theories and concepts used in the quantum mechanics.	<ol> <li>Lectures</li> <li>Tutorials</li> <li>Homework</li> <li>Oral discussion</li> </ol>				
1.3	List the steps required to carry out a piece of research on a topic within quantum mechanics	<ol> <li>Lectures</li> <li>Tutorials</li> <li>Homework</li> <li>Oral discussion</li> </ol>				
2.0	Cognitive Skills					
2.1	Explain appropriate theories, principles and concepts relevant to the quantum mechanics.	Preparing main outlines for teaching     Second representations of the second representation of th	1.Midterm's exam. Exams, short quizzes     2.Asking about physical laws previously taught			
2.2	Analyze the information from a variety of sources relevant to quantum mechanics.	4.Encourage the student to look for the information in different references	3.Writing reports on selected parts of the course 4.Discussions of how to			
2.3	prepare a reasoned argument to the solution of familiar and unfamiliar problems relevant to mathematical equations in quantum mechanics.	5.Ask the student to attend lectures for practice solving problem	simplify or analyze some phenomena			
3.0	Interpersonal Skills & Responsibility					
3.1	Illustrate practical activities using techniques and procedures appropriate to mathematic related to quantum mechanics.	<ul> <li>Search through the internet and use the library.</li> <li>Lab work.</li> <li>Small group discussion.</li> </ul>	<ul> <li>Evaluate the efforts of each student in preparing the report.</li> <li>Evaluate the scientific</li> </ul>			
3.2	Write a piece of independent research using mathematics media and techniques in quantum mechanics	<ul> <li>Enhance educational skills.</li> <li>Develop their interest in Science through :( lab work, field trips, visits to scientific</li> </ul>	values of reports.  • Evaluate the work in team  • Evaluation of the role of each student in lab group			
3.3	Evaluate and solve problems relevant to quantum mechanics	<ul> <li>and research.</li> <li>Encourage the student to attend lectures regularly</li> <li>Give students tasks of duties</li> </ul>	assignment  • Evaluation of students presentations			
4.0	Communication, Information Technology	ogy, Numerical				
4.1	Interpret data relevant to quantum mechanics.	Homework     preparing a report on some	Evaluation of presentations     Evaluation of reports			
4.2	Operate effectively as part of a group, involving leadership, group dynamics and interpersonal skills such as	topics related to the course depending on web sites.	<ul><li> Practical exam</li><li> Homework.</li><li> Final exams.</li></ul>			

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4.3	listening, negotiation and persuasion relevant to mathematics and theoretical physics.  Self-appraise and reflect on practice relevant to quantum mechanics.		
5.0	Psychomotor		
5.1	N/A	N/A	N/A

6. Map cour the top.)	6. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)						SS											
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	3.3	3.4	4.1	4.2	4.3	4.4	5.1	5.2
1.1		✓																
1.2	✓																	
1.3									✓									
2.1			✓															
2.2							✓											
2.3						✓												
3.1															✓			
3.2									✓									
3.3						✓												
4.1													✓					
4.2										✓								
4.3															✓			



الهيئة الوطنية للتقويم

المملكة العربية السعودية

#### **Academic Accreditation & Assessment**

6. S	chedule of Assessment Tasks for Students D	uring the Semest	er			
Assess ment	Assessment task (eg. essay, test, group project, examination etc.)	Week due				
1	Periodical Exam (s)	4	15 min	10 %		
2	Mid Term Exam (Theoretic)	8	60 min	30 %		
3	Mid Term Exam (practical)					
4	Reports and essay	11		20 %		
5	Final Practical Exam					
6	Final Exam	16	120 min	40 %		
	Total Marks	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)

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. S. Gasiorowicz, "Quantum Mechanics", John Wiley & Sons, Inc., 3<sup>rd</sup> Ed. (2003).
- 2. List Essential References Materials (Journals, Reports, etc.)
- 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
  - 1- David J. Griffiths "Introduction to Quantum Mechanics", Pearson Prentice Hall, New York, USA, (2005).
  - 2- Nouredine Zettili, "Quantum Mechanics: Concepts and Applications", John Wiley & Sons, Inc. (2001).
- 4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
  - <a href="http://en.wikipedia.org/wiki/Quantum Mechanics/">http://en.wikipedia.org/wiki/Quantum Mechanics/</a>
  - <a href="http://www.dmoz.org/Science/Physics/Quantum Mechanics/">http://www.dmoz.org/Science/Physics/Quantum Mechanics/</a>



المملكة العربية السعودية الهيئة الوطنية الوطنية والهيئة الوطنية التقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

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.



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- 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:Abdelrahman L	ashin
Signature:	Date Report Completed:
Name of Field Experience Teaching Staff	
Program Coordinator:Dr. Fahd Al	-Hashmi
Signature: Jahd Al-Hashmi	Date Received: 23/4/1439



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

**Academic Accreditation & Assessment** 

Course: Islamic Culture (3) Code: 601301-3





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: ٢٠١٣٠١

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 ٢٠١١٠١ الثقافة الإسلامية ٢٠١٢٠١

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

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#### **Academic Accreditation & Assessment**

7	نظام العقوبات إلى نهاية عقوبة اللواط (ص٢٢٠–٢٤٨)
۳ ۱	من حد القذف إلى الفروق بين الحدود والقوانين (ص٢٤٩–٢٦٦)
	بعض الشبهات _ حقوق الإنسان في الإسلام (ص٢٦٧-٢٨٢)

۲ ع	اختبارات : ٦	مادة الدرس: ٤٢	٤٨:ق	المحاضر
ها الطالب		التعلم المتوقع أن يستوفيها ال	ناصة إضافية/ساعات	۳– ساعات دراسة خ
		رر وتلخيصه	اءة كتاب له صلة بالمة	– يكلف الطالب بقرا
۰ ر		س على البريد الالكتروني	ئج التجربة على المدر	– عرض الأسئلة ونتا
. ر		س على البريد الالكتروني .	ئج التجربة على المدر	- عرض الأسئلة ونتا 4- المعارف:
		س على البريد الالكتروني . ا: أن يكون الطالب قادرا علم		٤− المعارف:
		ا: أن يكون الطالب قادرا علم		٤ – المعارف : ١ –توصيف للد

- 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.
  - ععرف النظام السياسي الاسلامي وأهدافه وغاياته وأسس النظام السياسي للدولة الاسلامية ٠
  - 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 .

يحدد مفهوم نظام الاسرة في الاسلام واهم احكامه.

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### **Academic Accreditation & Assessment**

	<ul> <li>زيارة المواقع الإلكترونية والاستفادة منها.</li> </ul>
	٣—طرق تقويم المعارف المكتسبة :
	<ul> <li>الأسئلة الشفوية المباشرة خلال المحاضرة.</li> </ul>
	<ul> <li>الاختبارات التحريرية.</li> </ul>
	٠. المهارات الإدراكية:
	المهارات الإدراكية المراد تطويرها: أن يكون الطالب قادرا على أن :
	<ul> <li>يقارن بين خصائص النظم الإسلامية.</li> </ul>
امي.	● يبرهن على خصائص الشريعة الإسلامية ومكانة التشريع في الدين الاسلا
	● يتبنى مفهوم نظام الاسرة في الاسلام واهم احكامه.
مالي ومعرفة اهم مساوئهما.	● يستخلص مفهوم النظام الاقتصادي الوضعي الشيوعي الاشتراكي والراسم
المال والملكية والعمل ومعرفة نبذة عن	● يرتب أهم مزايا الاقتصاد الاسلامي وأسسه ونظرة الشريعة الاسلامية الى
	البيوع ومفاتيح الرزق الحلال.
للدولة الاسلامية ٠	● يدلل النظام السياسي الاسلامي وأهدافه وغاياته وأسس النظام السياسي
غوق الراعي والرعية·	● يحلل كيفية نشأة الدولة الاسلامية في العهد النبوي والراشدي وعرفة حـ
ة عليها.	<ol> <li>ا. يبرهن على نظام العقوبات والحدود والضرورات الخمس وسبل المحافظ</li> </ol>
	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.
	– تقييم آراء الطلاب اثناء مناقشة القضايا ابان الدرس.
	. مهارات التعامل مع الآخرين و تحمل المسؤولية:

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#### **Academic Accreditation & Assessment**

	ها :	ب لمهارات العلاقات الشخصية والقدرة على تحمل المسؤولية المطلوب تطويرا	۱ —وصف			
		المبادرة في التواصل مع الزملاء .	_			
	<ul> <li>الرغبة في الإسهام في تنمية التواصل الاجتماعي.</li> </ul>					
		القدرة على التواصل الاجتماعي عبر شبكة المعلومات الفيس بوك.	_			
		تقبل النقد العلمي من الزملاء وكسر الجمود الفكري عن طريق الحوار.	_			
		إتيجيات التعليم المستخدمة في تطوير هذه المهارات:	۲ —استر			
		المحاضرات الأسبوعية.	_			
		البحث المكتبي الجماعي.	_			
	لاب:	ن تقويم مهارات التعامل مع الآخرين والقدرة على تحمل المسؤولية لدى الط	۳– طرز			
		– الاستطلاع المباشر لأراء الطلاب وتطلعاتهم.				
		– الملاحظة المباشرة لسلوك الطلاب وتوجهاتهم.				
		لحركية النفسية (لاتوجد): ، مهام تقويم الطلاب خلال الفصل الدراسي:				
%.4.	الثامن	اختبار نصفي	١			
<b>%</b> Υ.	جميع الأسابيع	الملاحظة المباشرة لقياس المهارات على طريقة التقويم المستمر	۲			
%1.	السادس عشر	النهائي	٣			

#### د. الدعم الطلابي:

<ul> <li>الساعات المكتبية للإجابة على الاستفسارات·</li> </ul>	
صادر التعلم:	٠
الكتب المقررة المطلوبة: (يرجى التحديث المستمر)	١
كتاب الثقافة الأسلامية (٣)	

● المدخل لدراسة النظم الاسلامية د٠محمدرافت سعيد٠

١--تدابير تقديم أعضاء هيئة التدريس للاستشارات والإرشاد الأكاديمي للطالب

الإرشاد والتوجيه الأكاديمي للطلاب

المحاضرة الأسبوعية .

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الهيئة الوطنية للتقويم والاعتماد الأكاديمي

المملكة العربية السعودية

**Academic Accreditation & Assessment** 

- النظم الاسلامية ٠٠ نشاتها وتطورها ٠ د · صبحي الصالح
  - الاحكام السلطانية للماوردي ولأبى يعلى
    - السياسة الشرعية لابن تيمية
      - الطرق الحكمية لابن القيم
      - التراتيب الادارية للكتاني
  - النظام الاساسى للحكم في المملكة العربية السعودية
    - التاريخ الاسلامى 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 اليداني .
    - 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

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

و . المرافق اللازمة:

#### **National Commission for**



**Academic Accreditation & Assessment** 

المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

	١ –المباني (قاعات المحاضرات، المختبرات،الخ):
	عة دراسية وعدد من الكراسي والطاولات يكفي لجميع الطلاب في المادة، مكتبة الكلية.
	٢ –مصادر الحاسب الآلي: معمل تخريج، مكتبة الكترونية.
:	٣-مصادر أخرى (حددهامثل: 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 ::
	<ul> <li>التقييم عن طريق المجموعات والأقسام المتناظرة.</li> </ul>
	<ul> <li>وحدة القياس والتقييم في الجامعة.</li> </ul>
	- عرض الدرس على بعض الزملاء.
	٣—عمليات تطوير التدريس :
	<ul> <li>عن طريق الدورات التابعة لوكالة التطوير الجامعي.</li> </ul>
	<ul> <li>عن طريق الدوريات الصادرة عن المؤسسات التعليمة والتربوية.</li> </ul>
	<ul> <li>عن طريق تبادل الخبرات التعليمة والفنية بين الأساتذة.</li> </ul>
	٤ - عمليات التحقق من معايير الإنجاز لدى الطالب
	<ul> <li>لجنة من القسم بمراجعة إجابات الطلاب وتقدير الدرجات المتحصل عليها.</li> </ul>
	<ul> <li>تقييم الامتحان والأسئلة المعدة للقياس والتقويم.</li> </ul>
	صف إجراءات التخطيط للمراجعة الدورية لمدى فعالية المقرر الدراسي والتخطيط لتطويرها:
	— تنقيح ومراجعة المقرر كل فصل دراسي.
	— العمل على تطوير مفردات المقرر.
	<ul> <li>الاستفادة من خبرات الأستاذة في المجموعات المتناظرة.</li> </ul>
	<ul> <li>الاستفادة من كل جديد لدى الدوريات والمجلات عن طرائق تدريس</li> </ul>

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



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Course Units/Credit	Lecture: 3 credit hours			
Hours				
		<b>Contact hours</b>	Private study	
Student workload	Lecture	45	45	
	Assignments	Assignments 0		
	Practical	0	0	
	Exams & Quizzes	4	12	
	Sum	49	67	
	Total Sum 116			
Credits	4 ECTS C.Ps			

2. Course components (total contact hours and credits per semester):							
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total	
Contact Hours	45	0	0	0	4	49	
Credit	3	0	0	0	0	3	
3. Additional private study/learning hours expected of students per week.  4.47							

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المملكة العربية السعودية الهيئسة الوطنيسة للتقوي والاعتصاد الأكادي





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



Course Specifications (CS)



Program: Medical Physics



Course title: Physics of Cell Membrane and Macromolecules





Course code: 4033298-2



This form Compatible with NCAAA 2013 Edition





المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمسى

## **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 Medicin	ne Course Code: 4034291-2				
2. Credit hours: <b>2</b> ( <b>2</b> + <b>0</b> + <b>0</b> ) <b>Hr</b>					
3. Program(s) in which the course is offered: <b>Bachelor of Science</b> ( <b>B.Sc</b> ) <b>Medical Physics</b> (If general elective available in many programs indicate this rather than list programs)					
(ii general elective available iii many pr	ograms indicate this rather than list programs)				
4. Course Language: English					
5. Name of faculty member responsible					
6. Level/year at which this course is off	sam Salaheldin Ibrahim fered: Level 5 / 3 <sup>th</sup> Year				
7. Prerequisites for this course (if any):					
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 a	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?				
<b>Comments:</b> The mode of instruction is distributed and used two items [Traditional classroom with 80%, and 20% blended (traditional and online)]					

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#### **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:

- 1. The meaning of the statement that phospholipids and most other membrane constituents (e.g., proteins) are amphipathic molecules.
- 2. How the fluid mosaic model of membrane structure explains each experimental finding:
  - **a**. actual membranes adhere more strongly to water than do artificial membranes composed only of phospholipids.
  - **b**. membranes with different functions may differ in type and number of membrane proteins.
  - c. membrane proteins are not very water-soluble.
- 3. The fluidity of the components of a cell membrane and explain how membrane fluidity is influenced by temperature and membrane composition.
- 4. How cholesterol resists changes in membrane fluidity as temperatures change.
- 5. Between peripheral and integral membrane proteins.
- 6. Six major functions of membrane proteins.
- 7. The role of membrane carbohydrates in cell-cell recognition.
- 8. The electrical properties of the cell membrane basic structure.
- 9. The two forces that combine to produce an electrochemical gradient.
- 10. How an electrogenic pump creates voltage across a membrane. Name two electrogenic pumps.
- 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.
- Interpersonal skills, relating to the ability to interact with other people and to engage in teamworking through group discussion.
- Problem solving skills, relating to qualitative and quantitative information.

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

Course Description:

# المنتق المنتقل المنتق

المملكة العربية السعودية الهيئية الوطنيية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

1 Topics to be Covered		
Topics	No of Weeks	Contact hours
Chapter 1		
Animal Cell Structure Background		
Basic Membrane Properties.		
• Lipids.	2	4
• Proteins.		
<ul> <li>Models of cell membranes:</li> <li>Robert Hooke model.</li> <li>Charles Overton model.</li> <li>Gorter and Grendel model.</li> <li>Danielli and Davson model.</li> <li>Robertson model.</li> <li>Singer and Nicolson model (Fluid Mosaic Model as a Cell Membrane Model).</li> </ul>		
• Quizzes.		
Homewrorks.		
Chapter 2		
The Fluid Mosaic model General structure.		
The Fluid Mosaic model plasma membrane main components:		
• Lipids.		
The structure of the fatty acid forimg the basic lipid of the cell membrane.		
The major difference between saturated and unsaturated fatty acid.	2	4
• The architecture of the lipids in the polar medium (micelle, bilayer, and liposome).	3	4
Basics plasma membrane lipids:		
<ul> <li>Phospholipids.</li> <li>Glycolipids.</li> <li>Cholesterol, and their function's role</li> <li>Function of the basic lipid membrane in the plasma</li> </ul>		



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#### **Academic Accreditation & Assessment**

membrane.		
• What is the relation between fatty acid saturation type and the van der Waals forces that packing the lipids together?		
• Proteins.		
The proteins form mainly two classes:		
• (a) Peripheral (extrinsic) proteins.		
• (b) Integral (intrinsic) proteins.		
In addition to lipoprotein.		
Function of the basic protein membrane in the plasma membrane.		
Carbohydrates.		
• In general, they are found on the outside surface of cells and are bound either to proteins (forming <b>glycoproteins</b> ) or to lipids (forming glycolipids).		
Function of the basic carbohydrates membrane in the plasma membrane.		
• Quizzes.		
Homeworks.		
Chapter 3		
<ul> <li>Cell membrane fluidity.         <ul> <li>Factors affecting cell membrane fluidity.</li> <li>Temperature.</li> <li>Lipid fatty acid composition.</li> <li>Cholesterol content.</li> </ul> </li> <li>Discussion of how cell membrane fluidity depends on temperature.</li> <li>Discussion of how cell membrane fluidity depends on lipid the fatty acid composition.</li> <li>Discussion of how cell membrane fluidity depends on Cholesterol content.</li> </ul> <li>Quizzes.</li> <li>Homeworks.</li>	3	6
First Class Test Exam		



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<ul> <li>Cell Membrane Physics</li> <li>Introduction to Neurology: <ul> <li>The central nervous system.</li> <li>Sensory nerve cell.</li> <li>Motor nerve cell (neuron).</li> <li>Basic structure of the neuron (Cell Body, Dendrites, Axon, Synapse (axon terminals)).</li> <li>Axon Termini and Synapses</li> <li>Types of Synapses.</li> <li>Electrical Synapses.</li> <li>Chemical synapses.</li> <li>Excitatory. <ul> <li>Inhibitory</li> </ul> </li> <li>Electrical Potential of Nerves.</li> <li>Resting Membrane Potential (RMP).</li> <li>Action Potential (Propagation of Nerve impulse).</li> <li>Electrical Properties of Neurons.</li> <li>There are two different types of nerve fibers: <ul> <li>Myelinated Nerves.</li> <li>Unmyelinated nerves.</li> <li>The transmission of nerve impulse along an unmylinated axon.</li> <li>Steps of action potential to propagate nerve impulse.</li> <li>Saltatory Conduction.</li> </ul> </li> <li>Quizzes.</li> <li>Homeworks.</li> </ul> </li> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron: <ul> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul> </li> </ul>		Chapter 4		
<ul> <li>The central nervous system.</li> <li>The peripheral nervous system.</li> <li>Sensory nerve cell.</li> <li>Motor nerve cell (neuron).</li> <li>Basic structure of the neuron (Cell Body, Dendrites, Axon, Synapse (axon terminals)).</li> <li>Axon Termini and Synapses</li> <li>Types of Synapses.</li> <li>Electrical Synapses.</li> <li>Chemical synapses.</li> <li>Excitatory.  <ul> <li>Inhibitory</li> </ul> </li> <li>Electrical Potential of Nerves.</li> <li>Resting Membrane Potential (RMP).</li> <li>Action Potential (Propagation of Nerve impulse).</li> <li>Electrical Properties of Neurons.</li> <li>There are two different types of nerve fibers: <ul> <li>Myelinated Nerves.</li> <li>Unmyelinated nerves.</li> <li>The transmission of nerve impulse along an unmylinated axon.</li> <li>Steps of action potential to propagate nerve impulse.</li> <li>Saltatory Conduction.</li> </ul> </li> <li>Quizzes. <ul> <li>Homeworks.</li> </ul> </li> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron:  <ul> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul> </li> </ul>	• Cell M	Iembrane Physics		
<ul> <li>The peripheral nervous system.</li> <li>Sensory nerve cell.</li> <li>Motor nerve cell (neuron).</li> <li>Basic structure of the neuron (Cell Body, Dendrites, Axon, Synapse (axon terminals)).</li> <li>Axon Termini and Synapses</li> <li>Types of Synapses.</li> <li>Electrical Synapses.</li> <li>Chemical synapses.</li> <li>Excitatory.  Inhibitory</li> <li>Electrical Potential of Nerves.</li> <li>Resting Membrane Potential (RMP).</li> <li>Action Potential (Propagation of Nerve impulse).</li> <li>Electrical Properties of Neurons.</li> <li>There are two different types of nerve fibers:  Myelinated Nerves.</li> <li>Unmyelinated nerves.</li> <li>The transmission of nerve impulse along an unmylinated axon.</li> <li>Steps of action potential to propagate nerve impulse.</li> <li>Saltatory Conduction.</li> <li>Quizzes.</li> <li>Homeworks.</li> </ul> Chapter 5 <ul> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron:</li> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul>	• Introdu	action to Neurology:		
<ul> <li>Sensory nerve cell.</li> <li>Motor nerve cell (neuron).</li> <li>Basic structure of the neuron (Cell Body, Dendrites, Axon, Synapse (axon terminals)).</li> <li>Axon Termini and Synapses</li> <li>Types of Synapses.</li> <li>Electrical Synapses.</li> <li>Chemical synapses.</li> <li>Excitatory.</li> <li>Inhibitory</li> <li>Electrical Potential of Nerves.</li> <li>Resting Membrane Potential (RMP).</li> <li>Action Potential (Propagation of Nerve impulse).</li> <li>Electrical Properties of Neurons.</li> <li>There are two different types of nerve fibers:</li> <li>Myelinated Nerves.</li> <li>Unmyelinated nerves.</li> <li>The transmission of nerve impulse along an unmylinated axon.</li> <li>Steps of action potential to propagate nerve impulse.</li> <li>Saltatory Conduction.</li> <li>Quizzes.</li> <li>Homeworks.</li> </ul> Chapter 5 <ul> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron:</li> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul>	0	The central nervous system.		
<ul> <li>Motor nerve cell (neuron).</li> <li>Basic structure of the neuron (Cell Body, Dendrites, Axon, Synapse (axon terminals)).</li> <li>Axon Termini and Synapses</li> <li>Types of Synapses.</li> <li>Electrical Synapses.</li> <li>Chemical synapses.</li> <li>Echemical synapses.</li> <li>Echemical synapses.</li> <li>Excitatory.</li> <li>Inhibitory</li> <li>Electrical Potential of Nerves.</li> <li>Resting Membrane Potential (RMP).</li> <li>Action Potential (Propagation of Nerve impulse).</li> <li>Electrical Properties of Neurons.</li> <li>There are two different types of nerve fibers: <ul> <li>Myelinated Nerves.</li> <li>Unmyelinated nerves.</li> <li>The transmission of nerve impulse along an unmylinated axon.</li> <li>Steps of action potential to propagate nerve impulse.</li> <li>Saltatory Conduction.</li> </ul> </li> <li>Quizzes.</li> <li>Homeworks.</li> </ul> <ul> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron: <ul> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul> </li> </ul>	0	The peripheral nervous system.		
Basic structure of the neuron (Cell Body, Dendrites, Axon, Synapse (axon terminals)).  Axon Termini and Synapses Types of Synapses.  Electrical Synapses.  Chemical synapses.  Excitatory. Inhibitory  Electrical Potential of Nerves.  Resting Membrane Potential (RMP).  Action Potential (Propagation of Nerve impulse).  Electrical Properties of Neurons.  There are two different types of nerve fibers:  Myelinated Nerves.  Ummyelinated nerves.  Ummylinated nerves.  The transmission of nerve impulse along an unmylinated axon.  Steps of action potential to propagate nerve impulse.  Saltatory Conduction.  Quizzes.  Homeworks.  Chapter 5  Electrical properties of neurons.  Electrical circuit equivalent neuron: Resistivity and Resistance of axoplasm  Resistivity for an unmyelinated axon.	0	Sensory nerve cell.		
Dendrites, Axon, Synapse (axon terminals)).  Axon Termini and Synapses Types of Synapses.  Electrical Synapses.  Electrical Synapses.  Encitatory.  Inhibitory  Electrical Potential of Nerves.  Resting Membrane Potential (RMP).  Action Potential (Propagation of Nerve impulse).  Electrical Properties of Neurons.  There are two different types of nerve fibers:  Myelinated Nerves.  Ummyelinated nerves.  The transmission of nerve impulse along an unmylinated axon.  Steps of action potential to propagate nerve impulse.  Saltatory Conduction.  Quizzes.  Homeworks.  Chapter 5  Electrical properties of neurons.  Electrical circuit equivalent neuron:  Resistivity and Resistance of axoplasm  Resistivity for an unmyelinated axon.	0	Motor nerve cell (neuron).		
■ Axon Termini and Synapses ■ Types of Synapses. ■ Electrical Synapses. ■ Chemical synapses. ■ Excitatory. ⑤ Inhibitory ⑤ Electrical Potential of Nerves. ■ Resting Membrane Potential (RMP). ■ Action Potential (Propagation of Nerve impulse). ⑥ Electrical Properties of Neurons. ⑤ There are two different types of nerve fibers: ■ Myelinated Nerves. ■ Unmyelinated nerves. ■ Unmyelinated nerves. ■ The transmission of nerve impulse along an unmylinated axon. ⑥ Steps of action potential to propagate nerve impulse. ⑥ Saltatory Conduction. ■ Quizzes. ■ Homeworks.  Chapter 5 ■ Electrical properties of neurons. ■ Electrical circuit equivalent neuron: ⑥ Resistivity and Resistance of axoplasm ■ Resistivity for an unmyelinated axon.		<ul> <li>Basic structure of the neuron (Cell Body,</li> </ul>		
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Resting Membrane Potential (RMP).  Action Potential (Propagation of Nerve impulse).  Electrical Properties of Neurons.  There are two different types of nerve fibers:  Myelinated Nerves.  Unmyelinated nerves.  The transmission of nerve impulse along an unmylinated axon.  Steps of action potential to propagate nerve impulse.  Saltatory Conduction.  Quizzes.  Homeworks.  Chapter 5  Electrical properties of neurons.  Electrical circuit equivalent neuron:  Resistivity and Resistance of axoplasm  Resistivity for an unmyelinated axon.	0	Electrical Potential of Nerves.	3	6
impulse).  O Electrical Properties of Neurons.  O There are two different types of nerve fibers:  Myelinated Nerves.  Unmyelinated nerves.  The transmission of nerve impulse along an unmylinated axon.  Steps of action potential to propagate nerve impulse.  Saltatory Conduction.  Quizzes.  Homeworks.  Chapter 5  Electrical properties of neurons.  Electrical circuit equivalent neuron:  Resistivity and Resistance of axoplasm  Resistivity for an unmyelinated axon.				
<ul> <li>Electrical Properties of Neurons.</li> <li>There are two different types of nerve fibers:         <ul> <li>Myelinated Nerves.</li> <li>Unmyelinated nerves.</li> <li>The transmission of nerve impulse along an unmylinated axon.</li> <li>Steps of action potential to propagate nerve impulse.</li> <li>Saltatory Conduction.</li> </ul> </li> <li>Quizzes.         <ul> <li>Homeworks.</li> </ul> </li> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron:</li></ul>		<ul> <li>Action Potential (Propagation of Nerve</li> </ul>		
<ul> <li>There are two different types of nerve fibers:         <ul> <li>Myelinated Nerves.</li> <li>Unmyelinated nerves.</li> <li>The transmission of nerve impulse along an unmylinated axon.</li> <li>Steps of action potential to propagate nerve impulse.</li> <li>Saltatory Conduction.</li> </ul> </li> <li>Quizzes.         <ul> <li>Homeworks.</li> </ul> </li> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron:                 <ul> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul> </li> </ul>		- · · ·		
<ul> <li>Myelinated Nerves.</li> <li>Unmyelinated nerves.</li> <li>The transmission of nerve impulse along an unmylinated axon.</li> <li>Steps of action potential to propagate nerve impulse.</li> <li>Saltatory Conduction.</li> <li>Quizzes.</li> <li>Homeworks.</li> </ul> Chapter 5 <ul> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron:</li> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul>	0	-		
<ul> <li>Unmyelinated nerves.</li> <li>The transmission of nerve impulse along an unmylinated axon.</li> <li>Steps of action potential to propagate nerve impulse.</li> <li>Saltatory Conduction.</li> <li>Quizzes.</li> <li>Homeworks.</li> </ul> Chapter 5 <ul> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron:</li> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul>	0			
■ The transmission of nerve impulse along an unmylinated axon.  ○ Steps of action potential to propagate nerve impulse.  ○ Saltatory Conduction.  • Quizzes.  • Homeworks.  Chapter 5  • Electrical properties of neurons.  • Electrical circuit equivalent neuron:  ○ Resistivity and Resistance of axoplasm  ■ Resistivity for an unmyelinated axon.		<ul> <li>Myelinated Nerves.</li> </ul>		
unmylinated axon.  Steps of action potential to propagate nerve impulse. Saltatory Conduction.  Quizzes. Homeworks.  Chapter 5  Electrical properties of neurons. Electrical circuit equivalent neuron: Resistivity and Resistance of axoplasm Resistivity for an unmyelinated axon.		•		
<ul> <li>Steps of action potential to propagate nerve impulse.</li> <li>Saltatory Conduction.</li> <li>Quizzes.</li> <li>Homeworks.</li> <li>Chapter 5</li> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron:         <ul> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul> </li> </ul>				
<ul> <li>Saltatory Conduction.</li> <li>Quizzes.</li> <li>Homeworks.</li> </ul> Chapter 5 <ul> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron:</li> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul>		•		
<ul> <li>Quizzes.</li> <li>Homeworks.</li> <li>Chapter 5</li> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron: <ul> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul> </li> </ul>	0			
<ul> <li>Homeworks.</li> <li>Chapter 5</li> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron: <ul> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul> </li> </ul>	0	Saltatory Conduction.		
Chapter 5  • Electrical properties of neurons. • Electrical circuit equivalent neuron:  • Resistivity and Resistance of axoplasm  • Resistivity for an unmyelinated axon.	• Quizze	es.		
<ul> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron:         <ul> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul> </li> </ul>	• Home	works.		
<ul> <li>Electrical properties of neurons.</li> <li>Electrical circuit equivalent neuron:         <ul> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul> </li> </ul>		Clareton 5		
<ul> <li>Electrical circuit equivalent neuron:         <ul> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul> </li> </ul>	F1			
<ul> <li>Resistivity and Resistance of axoplasm</li> <li>Resistivity for an unmyelinated axon.</li> </ul>		1 1		
<ul> <li>Resistivity for an unmyelinated axon.</li> </ul>		-		
<ul> <li>Resistivity for a myelinated axon.</li> </ul>				
Resistance for an unmyelinated axon.				



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<ul> <li>Resistance for a myelinated axons.</li> </ul>		
<ul> <li>The capacitance per unit area for unmyelinated axons.</li> </ul>		
<ul> <li>The capacitance per unit area for myelinated axons.</li> </ul>		
<ul> <li>Interpretation of Impulse Propagation:</li> </ul>		
<ul> <li>Propagation speed for unmyelinated axons.</li> </ul>		
<ul> <li>Propagation speed for myelinated axons.</li> </ul>		
<ul> <li>Solved problems.</li> </ul>		
<ul> <li>Unsolved problems.</li> </ul>	4	8
<ul> <li>Electrical properties of cell membrane.</li> </ul>	, T	O
<ul> <li>Membrane potential (E<sub>m</sub>)</li> </ul>		
<ul> <li>Electrogenic pump.</li> </ul>		
<ul> <li>Equilibrium potential</li> </ul>		
<ul> <li>Nernst potential; or diffusion potential.</li> </ul>		
<ul> <li>Membrane</li> </ul>		
Equilibrium (Nernest) Potenial Equation for certain ion		
$(e.g. Na^+, K^+, Cl^-).$		
<ul> <li>Donnan Equilibrium.</li> </ul>		
<ul> <li>Affect of Donnan equilibrium.</li> </ul>		
<ul> <li>Derivation of Dannon Equilibrium Equation.</li> </ul>		
<ul> <li>Resting Membrane Potential (R.M.P).</li> </ul>		
<ul> <li>Calculation of Resting Membrane Potential (R.M.P.).</li> </ul>		
<ul> <li>Conductance (G) of the cell membrane.</li> </ul>		
<ul> <li>Some physical techniques to separate macrolmolecules:</li> </ul>		
<ul> <li>Isolated of proteins by centrifugation.</li> </ul>		
<ul> <li>Using spectroscopic techniques to identify molecular weight.</li> </ul>		
<ul> <li>Bear-Lambert law.</li> </ul>		
<ul> <li>Derivation of Bear Lambert law</li> </ul>		
<ul> <li>SDS-PAGE (Sodium Dodecyl Sulfate Polyacrylamide Gel</li> </ul>		
Electrophoresis)		
• Quizzes.		
Homeworks.		
Second Class Test Exam		
	15	20.1
	weeks	30 hr



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Course Units/Credit Hours	2 (2+0+0) C. H					
		<b>Contact hours</b>	Private study			
	Lecture	30	45			
	Assignments	0	15			
Student workload	Practical	0	0			
Student Workload	Exams & Quizzes	7	20			
	Sum	37	80			
	Total Sum	11	8			
Credits	4 ECTS C.Ps					

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total
Contact Hours	30	0	0	0	7	37
Credit	2	0	0	0	0	2
3. Additional private study/learning hours expected of students per week.  5.33						

### 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

# المناد الواحدية التقوير المناد الواحدية التقوير

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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 th	ne student should be able to:	
1.1	Define the fundamental knowledge of cell membrane basic structure.	<ul> <li>Classroom lectures</li> <li>Tutorials and independent study assignments</li> <li>Individually hand written assignments required use of</li> </ul>	<ul><li>Graded homework.</li><li>Assignments.</li><li>Quizzes.</li><li>Oral Group Discussion.</li><li>Class tests (e.g. 15 minute</li></ul>
1.2	Outline the major macromolecules of the plasma cell membrane.	library reference material and web sites to identify the information required to	multiple choice test on content on completion of each topic) with a defined ratio of the final
1.3	Recognize the essential electrical properties of the nerve cell membrane	complete tasks E-learning through the university website.	assessment of the course.  Multiple choice knowledge item on final exam
1.4	State various techniques of to identify biological macromolecules.		
2.0	Cognitive Skills  At the end of this course th	ne student should be able to:	
2.1	Summarize electrical circuit equivalent neuron.	- Explain and justify several unsolved examples and unsolved problems in lecture	- Graded homework Class exams.
2.2	Compare between basic physical properties of the myelinated and unmyelinated nerve cell.	under the supervision of the instructor.  - Encourage the students to analyze and design the equivalent cell membrane electrical circuit using	<ul> <li>Final Exam.</li> <li>Group and individual assignments require application of analytical tools in problem solving tasks.</li> </ul>
2.3	Recorganize various physical techniques used to separate macrolmolecules.	program packages (e.g. MATLAB).	- Class participation.
3.0	Interpersonal Skills & Re At the end of this course th	sponsibility ne student should be able to:	

# المالة المالة

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<b>5.0</b> 5.1	Psychomotor  Not applicable (N/A)	manual.	- N/A
		manual.	
4.1	Appraise the cooperation through teamwork to assess and criticize various emergent problems.  Interpret the defined noise and artifacts an in the medical images to be improved using different signal and/or image processing package.	<ul> <li>Essay questions</li> <li>Group presentation</li> <li>Encouraging assays, reports and presentations.</li> <li>Encourage the student to use the modern Information and Communication Technology (ICT) tools to prepare the required essays, reports, and/or projects.</li> <li>Also, the students should conduct the ideal proper style and referencing format as specified in college style</li> </ul>	<ul> <li>Assessments of student's assignments.</li> <li>Evaluation of group reports and individual contribution within the group.</li> <li>Reports and presentations.</li> <li>Instructor's feedback</li> <li>Final and short exams include different problems which need numerical and technical skills.</li> </ul>
3.1		- 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).  Attion Technology, Numerical the student should be able to:	<ul> <li>Individual student assignment or report carries out using the internet and/or library as a source of search.</li> <li>Evaluation of group reports and individual contribution within the group.</li> <li>Peer or self assessment.</li> <li>Evaluation of the capacity for independent study which could be assessed in individual assignments.</li> </ul>

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5. Map top.)	lap course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the																		
Course LOs #		Program Learning Outcomes (Use Program LO Code #s provided in the Program Specifications)																	
	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1
1.1	✓		✓																
1.2			✓		✓	✓													
1.3	✓	✓		<b>√</b>															
1.4							✓	✓	✓		✓								
2.1							✓				✓								
2.2									✓										
2.3									✓	✓	✓								
2.4							✓												
3.1												<b>✓</b>	✓						
3.2												<b>✓</b>		✓					
4.1															✓	✓			
4.2																	✓		
5.1										N.A									

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Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	30 %
3	Mid Term Exam (practical)			
4	Reports and essay	11		20 %
5	Final Practical Exam			
6	Final Exam	16	120 min	40 %
	Total Marks			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)

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, Elsevier Inc Ltd, 3<sup>rd</sup> Ed, 2008.
- [2] Membrane Biophysics by H. Ti Tien and Angelica Ottova-Leitmannova, 3<sup>rd</sup> Eds, 2010.
- [2] Structural Biology with Biochemical And Biophysics Foundation by Mary Luckey, 1<sup>st</sup> edition, Cambridge University Press, 2008.
- [3] Cell Biology and Membrane Transport Processes by Michael Caplan, Intenernational Edition, Academic Press, 1994.



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- 2. List Essential References Materials (Journals, Reports, ......etc.) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3456180/ https://www.cell.com/biophysj/home
- 3. List Recommended Textbooks and Reference Material (Journals, Reports, .....etc.)
- 4. List Electronic Materials, Web Sites, Facebook, Twitter, .......etc.)
  - https://www.sciencedirect.com/bookseries/membrane-science-and-technology/vol/7/suppl/C.
- 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

Strategies for Obtaining Student Feedback on Effectiveness of Teaching

**Ouestion to students on the course evaluation.** 

**Ouestion 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.



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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:	Hosem	Date Report Completed: 17/4/1439		
Name of Field	Experience Teaching St	taff		
Program Coordinator:Dr. Fahd Al-Hashmi				
Signature: <b>7aha</b>	l Al-Hashmi	Date Received: 23/4/1439		

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



## T6. Course Specifications (CS)



Course title: Physics of Medical Laser



Course code: 4033281-2



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## **Course Specifications**

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

A. Course Identification and General Information
1. Course title and code: Physics of Medical Laser (Code: 4033281-2)
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
Hosam Salaheldin Ibrahim
5. Level/year at which this course is offered: Level 5/3 <sup>rd</sup> Year
6. Pre-requisites for this course (if any): Fundamentals of medical Physics (4032280-4)
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?
b. blended (traditional and online)  What percentage? 20%
c. e-learning What percentage?
d. correspondence What percentage?
f. other What percentage?
Comments:

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#### **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 CO<sub>2</sub>, 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	Contact hours



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	Weeks	
Laser Principles		
<ol> <li>Theory of temporal and spatial coherence</li> <li>Coherence Length and Spectral Line Width</li> <li>The optical properties of Laser beam</li> <li>Electromagnetic Modes in a Cavity</li> <li>Theory of Laser Emission</li> <li>Major Types of Lasers</li> <li>Measuring Laser Power and Focusing Laser Energy</li> </ol>	4	8
Optical and Thermal Response of Tissue to Laser Radiation		
<ol> <li>The Optical Response Of Tissue</li> <li>Thermal Response Of Tissue</li> <li>Interaction of Laser Light With Living Systems</li> </ol>	2	4
Therapeutic and Diagnostic Application of Lasers in Ophthalmology		
<ol> <li>Basic Ocular Anatomy and Physiology and Transmission and Absorptive Properties of Ocular Tissues</li> <li>Photothermal Laser Applications</li> <li>Photodisruptive Laser Applications</li> <li>Photochemical Laser Applications: Photoablation and Photodynamic Therapy</li> </ol> First Class Test Exam	3	6
Diagnostic Laser Applications		
<ul> <li>Lasers in Ophthalmology.</li> <li>Retina.</li> <li>There exist six major indications for laser treatment of the retina: <ul> <li>retinal holes,</li> </ul> </li> </ul>		
<ul><li>retinal detachment,</li></ul>		
<ul> <li>diabetic retinopathy,</li> </ul>		
– central vein occlusion,		
– senile macula degeneration,		
<ul> <li>retinal tumors (retinoblastoma).</li> <li>Vitreous Body.</li> <li>Lens <ul> <li>Posterior capsulotomy.</li> </ul> </li> <li>Iris.</li> </ul>		



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o laser iridotomy.	5	10
Trabeculum.		
Laser Trabeculotomy.		
• Cornea:		
o Cornea structure.		
o Radial keratotomy.		
o Radial keratectomy (RK).		
o keratomileusis or photorefractive keratectomy (PRK)		
<ul> <li>Calculation of Theoretical values of keratomileusis in the case of myopia</li> </ul>		
<ul> <li>Laser in situ keratomileusis (LASIK).</li> </ul>		
<ul> <li>LASIK treatment with a Nd:Glass femtosecond laser.</li> </ul>		
Lasers in Dentistry.		
Second Class Test Exam		
Laser Safety	1	2
❖ Lasers in Ophthalmology	15 weeks	30 hr

Course Units/Credit Hours	2 (2+0+0) C. H					
Student workload		<b>Contact hours</b>	Private study			
	Lecture	30	45			
	Assignments	0	15			
	Practical	0	0			
	Exams & Quizzes	7	20			
	Sum	37	80			
	Total Sum	117				
Credits	4 ECTS C.Ps					

2. Course components (total contact hours and credits per semester):											
		Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams,	Total				
				01 2000		Assignments and Quizzes)					



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Contact Hours	30	0	0	0	7	37				
Credit	2	0	0	0	0	2				
3. Additional private study/learning hours expected of students per week.  5.33										

# 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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, 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	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.

# المنتق البطا المنتقل المنتقل

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1.2	Applying biological information to the use of laser	<ol> <li>5. Brain storming</li> <li>6. Start each chapter by general idea and the benefit of it.</li> <li>1. Applying the principles to realistic physics problems.</li> <li>2. Show the best ways to solve the problems</li> <li>3. Show the best ways to demonstrate the results.</li> </ol>	Home work.  Discussions during the class.
		4. Discussion with the student about the results.	
2.0	Cognitive Skills		
2.1	Apply the laws of physics.	1. Preparing main outlines for	1.Midterm's exam. Exams, short quizzes
2.2	Solve problems in Physics by using suitable mathematical principles	teaching  2.Following some proofs  3.Define duties for each chapter	2.Asking about methods previously taught     3.Discussions of how to simplify or
2.3	Analyse and interpret quantitative results	4.Encourage the student to look for the information in different	analyze some phenomena
2.4	Express the physical phenomena mathematically.	references  5.Ask the student to attend lectures for practice solving problem	
3.0	Interpersonal Skills & Responsi	bility	
3.1	Show responsibility for self- learning to be aware with recent developments in physics	<ul> <li>Search through the internet and use the library.</li> <li>Small group discussion.</li> <li>Enhance educational skills.</li> </ul>	<ul> <li>Evaluate the scientific values of solutions.</li> <li>Evaluate the work in team</li> <li>Evaluation of the role of each student</li> </ul>
3.2	Work effectively in groups.	<ul><li>Encourage the student to attend lectures regularly</li><li>Give students tasks of duties</li></ul>	in lab group assignment  • Evaluation of students presentations
4.0	Communication, Information T	echnology, Numerical	
4.1	Communicate effectively in oral and written form	<ul> <li>Homework</li> <li>preparing a report on some topics related to the course</li> </ul>	<ul><li>Evaluation of presentations</li><li>Evaluation of reports</li></ul>



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#### **Academic Accreditation & Assessment**

4.2	Collect and classify the material for a course	depending on web sites.	<ul><li> Practical exam</li><li> Homework.</li><li> Final exams.</li></ul>
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

	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	1.4	1.5	1.6	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1
1.1	✓		<b>√</b>		<b>√</b>														
1.2		✓		✓		✓													
2.1							✓		✓										
2.2								✓		✓									
2.3									✓										
2.4								✓			✓								
3.1												✓		✓					
3.2													✓						
4.1															✓		✓		
4.2																✓			
4.3																	✓		
4.4																✓		✓	
5.1																			

# المنتق المنتقلية التقوير المنتقلية التقوير والمنتقلية المنتقلية ا

المملكة العربية السعودية الهيئية الوطنيية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	30 %
3	Mid Term Exam (practical)			
4	Reports and essay	11		20 %
5	Final Practical Exam			
6	Final Exam	16	120 min	40 %
	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)

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] Markolf H. Niemz, Laser-Tissue Interactions "Fundamentals and Applications", Third, Enlarged Edition, 2007.
- 2. List Essential References Materials (Journals, Reports, etc.)
- 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
- 1-Paul Davidovits "Physics in Biology and Medicine" 3rd edi. Elsevier 2008.
- 2- John R. Cameron & James G. Skofronick "Medical physics" Willy John 1988

# المبنة الوطنية التقوير والإغتراج الإفتراجيين

#### **Academic Accreditation & Assessment**

- 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 classroom, 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.

# المنتق المنتقل المنتق

#### **Academic Accreditation & Assessment**

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- 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.

	8	4					
Name of Instructor: Hosam Sala	aheldin Ibrahim						
Signature:	Date Report Completed:						
Name of Field Experience Teaching S	Staff						
Program Coordinator:Dr. Fahd Al-Hashmi							
Signature: Jahd Al-Hashmi	Date Received: 23/4/1439						

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



## T6. Course Specifications (CS)



Program: Medical Physics

Course title: Physics of Medical Ultrasound



Course code: 4033290-2



This form Compatible with NCAAA 2013 Edition

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## **Course Specifications**

Institution: Umm AL – Qura Universit	ı <b>y</b>	Date: 17/4/1439			
College/Department: College of Applied Science – Department of Physics					
A. Course Identification and General I	nfarmatia				
A. Course Identification and General I	шогшано	11			
1. Course title: Physics of Medical Ult	rasound C	Course Code: 4033290	)-2		
2. Credit hours: <b>2</b> ( <b>2</b> + <b>0</b> + <b>0</b> ) <b>Hr</b>					
3. Program(s) in which the course is off		•	· · · · · · · · · · · · · · · · · · ·		
(If general elective available in many programs indicate this rather than list programs)					
4. Course Language: <b>English</b>					
5. Name of faculty member responsible for the course					
Dr. Hosam Salaheldin Ibrahim  6. Level/year at which this course is offered: 3 <sup>th</sup> Year / Level 5					
7. Prerequisites for this course (if any): Fundamentals of Medical Physics (4032280-4)					
, , , , , , , , , , , , , , , , , , , ,		ntais of Medical Phys	SICS (4032280-4)		
8. Co-requisites for this course (if any):		(41.1.)	•		
<ul><li>9. Location, if not on the main campus: Main campus (Abdeia) and Alzaher campus</li><li>10. Mode of Instruction (mark all that apply)</li></ul>					
10. Wode of instruction (mark an that a	.ppry)				
A. Traditional classroom	V	What percentage?	80%		
B. Blended (traditional and online)	V	What percentage?	20%		
C. E-learning		What percentage?			
D. Correspondence		What percentage?			
F. Other		What percentage?			

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#### **B** Objectives

3. 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 teamworking 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:

# المناف الوالية التقوير الإنجازية التقوير

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1 Topics to be Covered		
Topics	No of	Contact
	Weeks	hours
Waves in Elastic Media	2	4
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 ( $\mu$ ) and is under a tension (F)		
Ultrasound Waves	4	8
2.1 General Definitions		
2.2 Ultrasound (US) intensity		
• Relation between Ultrasound intensity and maximum pressure		
$(\mathbf{P_m})$ 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		
Generating and Detecting of Ultrasound	3	6
3.1 The Piezoelectric Effect:		
Naturally occurring crystalline materials		
Artificial materials		



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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	4	8
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		
The Doppler Effect:	2	4
1- Measurement of the frequency shift.		
2- Measurement of reflection from media of different acoustic		
impedances.		
	15	30 hr
	weeks	

Course Unit/Credit hours		2 (2+0+0) C. H	
		Contact hours	Private study
	Lecture	30	45
Student workload	Practical	0	15
Student Workload	Assignments	0	0
	Exams & Quizzes	7	18
	Sum	37	78
			115
Credit		4 ECTS C.Ps	

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2. Course components (total contact hours and credits per semester):									
Lecture Tutorial Laboratory or Studio Practical Other: (Exams, Assignments and Quizzes)									
Contact Hours	30	0	0	0	7	37			
Credit	2	0	0	0	0	2			
3. Additional private study/learning hours expected of students per week.  5.2									

### 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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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	And Course Learning Strategies			
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	<ul> <li>Classroom lectures</li> <li>Tutorials and independent study assignments</li> <li>Individually hand written assignments</li> </ul>	<ul> <li>- Graded homework.</li> <li>- Assignments.</li> <li>- Quizzes.</li> <li>- Oral Group Discussion.</li> <li>- Class tests (e.g. 15 minute multiple choice test on content on completion</li> </ul>		
1.2	Recognize the basic				

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1.3	knowledge of ultrasound wave generation, detection, and receiving using transducer.  List the basic modes of ultrasound imaging. Outline the basic information about Doppler effect and its applications.  Recognize how to assess, improve and develop the quality of medical ultrasound images.	required use of library reference material and web sites to identify the information required to complete tasks.  - E-learning through the university website.	of each topic) with a defined ratio of the final assessment of the course.  Multiple choice knowledge item on final exam
2.0	Cognitive Skills  At the end of this course the	e student should be able to:	
2.1 2.2 2.3	Expalin the physics ultrasound (US) waves basics, concerning the concepts, principles, and theories.  Investigate the transducer, structure, defects and problems in a field of study using a range of sources and draw valid conclusions.  Distinguish between different types of ultrasound imaging modes.  Recognize and predict the fundamentals and functions	<ul> <li>Explain and justify several unsolved examples and unsolved problems in lecture under the supervision of the instructor.</li> <li>Encourage the students to analyze and enhance the medical images using experimental software systems for freehand three-dimensional ultrasound imaging such as <i>Stradwin</i>.</li> </ul>	<ul> <li>Graded homework.</li> <li>Class exams.</li> <li>Final Exam.</li> <li>Group and individual assignments require application of analytical tools in problem solving tasks.</li> <li>Class participation.</li> </ul>
3.0	of Doppler effect. Interpersonal Skills & Res	ponsibility	
	At the end of this course the		
3.1	Work effectively in groups as well as individuals and appraise the cooperation through teamwork to assess and criticize various emergent problems.	<ul><li>Discuss with students.</li><li>Group presentation.</li><li>Group assignment (the instructor should meet with</li></ul>	- Evaluation of group reports and individual contribution within the group.

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3.3	Demonstrate a comprehensive knowledge of the principles of problem solving within the ultrasound profession in order to resolve issues in practice.  Develop the capacity to critically reflect on personal and professional practice in order to identify potential areas of development.	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.	<ul> <li>Peer or self assessment.</li> <li>Evaluation of the capacity for independent study which could be assessed in individual assignments.</li> </ul>								
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.		<ul><li>Assessments of student's assignments.</li><li>Evaluation of group reports and</li></ul>								
4.2	Evaluate and disseminate written and verbal information, with due regard to the practice needs and relatives.	and presentations.  - Encourage the student to use the modern Information and Communication	individual contribution within the group.  Reports and presentations.  - Instructor's feedback  - Final and short exams include different problems which need								
4.3	Demonstrate ICT to appraise and critically evaluate research relevant to advanced ultrasound practice.	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.	numerical and technical skills.								
5.0	Psychomotor										
5.1	Not applicable (N/A)	N/A	N/A								

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Course LOs #	Program Learning Outcomes (Use Program LO Code #s provided in the Program Specifications)																		
	1.1	1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 5.1																	
1.1	✓		<b>√</b>																
1.2			✓		<b>√</b>	✓													
1.3	✓	✓		✓															
1.4						✓													
2.1							✓	✓	✓		✓								
2.2							✓				✓								
2.3									✓										
2.4								✓	✓		✓								
3.1							✓												
3.2												✓	✓						
3.3													✓	✓	✓				
4.1																✓	✓		
4.2																	✓		
4.3																✓			
5.1																			

## المنتق الوطنية التقوير

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ssessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment	
1	Periodical Exam (s)	4	15 min	10 %	
2	Mid Term Exam (Theoretic)	8	60 min	30 %	
3	Mid Term Exam (practical)				
4	Reports and essay	11		20 %	
5	Final Practical Exam				
6	Final Exam	16	120 min	40 %	
	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)

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, 3<sup>rd</sup> 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. 4<sup>th</sup> Ed (2002).

## المنافر المنافرين التقوير المنافرين التقوير والإعتمال الإنجادين التقوير

#### **Academic Accreditation & Assessment**

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- 2. Paul Davidovits, Physics in Biology and Medicine, Elsevier Inc Ltd, 3<sup>rd</sup> 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

- 3 Strategies for Obtaining Student Feedback on Effectiveness of Teaching
- Ouestion 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
  - 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

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- 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:	
Signature: Hosam	Date Report Completed: 23/4/1439
Name of Field Experience 7	Teaching Staff
Program Coordinator:	Dr. Fahd Al-Hashmi
Signature: <b>7ahd</b> Al-Hashmi	Date Received: 23/4/1439

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المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### Level 6

Radiation Medical Physics (2) 4033292-4

**Nuclear Physics (1) 4034160-4** 

Solid State Physics (1) 4034170-4

Electromagnetism (1) 4033132-3

Health Physics 4033283-3

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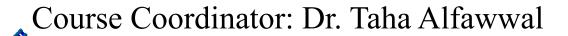


Course Specifications (CS)



Program: Medical Physics

Course title: Medical Radiation Physics 2





Course code: 4033292-4

This form Compatible with NCAAA 2013 Edition



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#### **Course Specifications**

Institution: Umm AL – Qura Universit	<b>y</b>	Date: 17/4/1439					
College/Department : College of Applie	ed Science	- Department of Ph	ysics				
A. Course Identification and General Information							
A. Course Identification and General I	nformatio	on					
1. Course title and code: Medical Radi	ation Phys	sics 2 (Code: 4034292	2-4)				
2. Credit hours: <b>4</b> ( <b>3</b> + <b>1</b> + <b>0</b> ) <b>Hrs</b>							
3. Program(s) in which the course is off		· · · · · · · · · · · · · · · · · · ·	1' 4				
(If general elective available in many production)  4. Name of faculty member responsible			list programs)				
Di	r. Taha Al	lfawwal					
5. Level/year at which this course is off	ered: 3 <sup>rd</sup> 1	Year/Level 6					
6. Pre-requisites for this course (if any):	Medical	<b>Radiation Physics 1</b>	(4033285-4)				
7. Co-requisites for this course (if any):							
8. Location if not on main campus: Mai	in male ca	impus (Abdeia) and A	Alzaher female				
<ul><li>campus.</li><li>9. Mode of Instruction (mark all that ap</li></ul>	nly)						
or mode of modulation (many air that ap	P-J/						
a. traditional classroom	<b>✓</b>	What percentage?	80%				
b. blended (traditional and online)	<b>✓</b>	What percentage?	20%				
c. e-learning		What percentage?					
d. correspondence		What percentage?					
f. other		What percentage?					
Comments:  The mode of instruction is distributed and blended (traditional and online)].	used two i	items [Traditional class	room with 80%, and 20%				

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#### **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 Factors affecting on exposure to cosmic radiation, Internal exposures to human from terrestrial radiations.
- 2.List the Reference Dose level (RDLs) in diagnostic Radiology, conventional x-ray and CT.
- 3-Acquire the basic of the radiation protection quantities and units, and operational quantities.
- 4-Calculate the entrance skin dose for patients undergoing diagnostic X-ray.
- 5-Describe types of phantoms of the human body.
- 6- Acquire information about occupational exposures and Environmental source geometries
- 7- **Acquire** different methods for external dosimetry.
- 8- **List** the différents route of radionucléides intime.
- 9-Calculate the internal dose using Médical Internal Radiation Dose, MIRD method.
- 10- Acquire procedure of direct measurement of internal dosimetry.
- 11- Describe 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 the natural back ground radiation and medical sources, Conventional x-ray dosimetry, Computed tomogram dosimetry, mammogram dosimetry and nuclear medicine dosimetry. In addition to study the concept and measurement of ambient dose equivalent, directional dose equivalent and personnal equivalent . it interested in managing radioactive contamination , decontamination factor and assessment of skin dose due to decontamination .

1 Topics to be Covered		
Topics	No of	Contact
	Weeks	hours



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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  Man made sourses  Defination of Reference Dose level, RDLs, List the RDLs level in diagnostic x-ray, computed tomogram and mammogram.	3	9 hrs
D (D D)		
Part B: External dosimetry. Introduction •		
Protection and operational quantities		
Protection quantities  Protection quantities		
• The basic Dosimetric Quantities		
Absorbed dose		
• Protection Quantities		
Mean Absorbed Dose		
• Equivalent Dose		
effective dose		
		10.1
Operational Quantities	4	12 hrs
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		
Calculating protection quantities in computational models		
1 <sup>st</sup> Class Test		
Part C Patients dosimetry		
Incidence Air Kerma		
Entrance Surface Air Kerma		0.1
X-ray tube output	3	9 hrs
Dose length product		
Computer tomogram Dose Index		
Direct and indirect dose assessment for patients underging diagnostic x-	]	

### المينة الوالم بينة التقوير المينة الوالم بينة التقوير والإغتمام الإنقاميية

الهيئة الوطنية للتقويم

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ray and computed tomogram.		
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	4	12hrs
Mean Dose per Cumulative Activity		
Whole Body Dose and Effective Dose		
W hole Body Dose and Effective Dose		
Patient dosimetry in diagnostic X-ray		
-Part E Methods of individual monitoring	1	3 hrs
Definition of decontamination, decontamination factor, skin dose		
Calculation.		
2 <sup>nd</sup> Class Test		
	15 weeks	45 hrs

#### **Practical part:**

- 1-Measurements the surface Radiotherapy Dose for hands, face and nose
- 2-X-ray dose output reproducibility
- 3-Linearity of X-ray machine
- 4-Calibration of an eye lens dosimeter in terms of an equivalent dose
- 5- Determination of Thyroid burden for I-31 using NaI(Tl) detector and thyroid Phantom
- 6- Assessment of absorbed doses to the brain and eyes associated with irradiation of the upper region of the eyes
  - of Head Rundo Phantom using superficial X-ray
- 7- Assessment of absorbed doses to thyroid during Irradiation of chest of Rundo Phantom using superficial X-ray with and without applicator.
- 8- Dose minimization to pelvic during abdomen exposure
- 9- Measurement Liver, uterus, pelvic organ doses.

Course Units/Credit Hours	Lecture: 4 credit hours						
		<b>Contact hours</b>	Private study				
	Lecture	45	50				
Student workload	Assignments	0	15				
Student Workload	Practical	28	14				
	Exams & Quizzes	8	20				
	Sum	81	99				



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	Total Sum	180
Credits	6 ECTS C.Ps	

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams, Assignments and Quizzes)	Total
Contact Hours	45	0	0	42	7	94
Credit 3 0 0 1 0 4  3. Additional private study/learning hours expected of students per week.						
3. Additional private study/learning hours expected of students per week.  6.6						

### 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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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.)

## المناف ا

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Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Outlines about natural background radiation and other sources.	Start each chapter by general idea of the meaning of exposure Demonstrate the course information and principles	<ul><li>Home work</li><li>Interactive discussion</li><li>Short exam1</li></ul>
1.2	List the RDLs for concentional x-ray, CT, Mammogram	through lectures.  Describing radiation protection concepts with	<ul><li>Short exam2</li><li>Final exam</li></ul>
1.3	Describe calibration of thermoluminscence dosimeters	solving problems  Describing the procedure of Calculation the internal dose using Médical Interna Radiation	1 Oral questions 2.Presentations 3 .Quizzes 4. Problem solving
1.4	State operational radiation quantities	Dose, MIRD method.	1 Oral questions 2. Presentations 3. Quizzes 4. Problem solving
1.5	Memorize protection radiation quantities.	_	4. Floblem solving
1.6	Describe different methods of medical internal dosimetry		
1.7	State fundamentals of Decontamination concept and reduction factor		
1.8	. Memorize the importance of Skin equivalent dose calculation.		
2.0	Cognitive Skills		
2.1	Evaluating the internal effective dosses for organs in nuclear medicine and related fields of studies.	<ul><li>Lectures.</li><li>Brain storming.</li></ul>	• Exam must contain questions that can measure these skills.
2.2	Applying the mathematical expressions in calculating the external and internal	• Discussion.	• Exam must contain questions that can measure these skills.

# المينة الوطالية التقوير والإغتار الإقتارية

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	doses due to external and internal exposure.		<ul><li> Quiz and exams</li><li> Discussions after the</li></ul>
2.3	Integrate information technology (IT) based solution into radiation.		lecture
3.0	Interpersonal Skills & Resp	onsibility	
3.1	work effectively in a group to make a decision.		
3.2	Analyse obtained data and how to manage it.	- Lab work -	Evaluate the efforts of each student in preparing the report.  Evaluation of student presentations
3.3	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	on 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	Field visits to hospitals	Practical exam
	to interpret the results.		
	Know how to write a report		
5.0	Psychomotor		
5.1	N. A	N. A	N. A



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5. Map top.)	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	1.4	1.5	1.6	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1
1.1		✓																	
1.2		✓																	
1.3			✓																
2.1								✓			✓								
2.2							<b>√</b>				✓								
2.3									✓										
2.4								✓	✓		✓								
2.5							✓												
3.1													✓						
3.2												✓							
4.1																	✓		
4.2																>			
4.3																	✓		
4.4																✓			
5.1																			

6. Schedule of Assessment Tasks for Students During the Semester					
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment	
1	Periodical Exam (s)	4	15 min	10 %	
2	Mid Term Exam (Theoretic)	8	60 min	20 %	

# المنافقة ال

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3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Marks		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)

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" 4<sup>th</sup> Ed. McGraw-Hill 2009.
- 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

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- 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
- 15- 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 Te	aching Staff
Program Coordinator:	Dr. Fahd Al-Hashmi
Signature: Jahd Al-Hashmi	Date Received: 23/4/1439

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T6. Course Specifications (CS)



Course title: Nuclear Physics



Course code: 4034160-4



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#### **Course Specifications**

Institution: Umm AL – Qura University	Date: 18/1/1439
College/Department : College of Applied Science	- Department of Physics

#### A. Course Identification and General Information

1. Course title and code: Nuclear Phys	1. Course title and code: Nuclear Physics (Code: 4034160-4)					
2. Credit hours: 4hrs (three hours lect	ure and one hour Lab.)					
3. Program(s) in which the course is of						
(If general elective available in many pr	rograms indicate this rather than list programs)					
4. Name of faculty member responsible						
Dr. Adel MADANI (ammadan						
5. Level/year at which this course is of	rered: 3 Year / Level 6					
6. Pre-requisites for this course (if any)	: Quantum mechanics (1) (4033145-4)					
7. Co-requisites for this course (if any)	:					
8. Location if not on main campus: Ma	in campus and Al-Zaher					
9. Mode of Instruction (mark all that ap	pply)					
a. traditional classroom	✓ What percentage? 80%					
b. blended (traditional and online)	What percentage?					
c. e-learning	What percentage?					
d. correspondence	What percentage?					
f. other	✓ What percentage? 20%					
Comments: Labs 20%						



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#### **B** Objectives

#### 1. What is the main purpose for this course?

The objectives of this course are to establish the meaning of the concepts of nuclear physics and elementary particles, and to ease out the theoretical models to describe the nuclear properties.

We want to be able:

The benchmark statement of the main learning outcomes are as follows:

- 1. To understand basic fundamentals of nuclear properties.
- 2. The students should be trained on physical and generic skills (knowledge cognitive interpersonal communication problem solving IT)
- 3. To understand the liquid drop model.
- 4. To understand the nuclear drop model.
- 5. To understand the origin of alpha transition within the nucleus.
- 6. To understand the origin of Gamma transition within the nucleus.
- 7. To understand the origin of Beta transition within the nucleus.
- 8. To understand the elementary particles.

The overall goal is to understand the fundamentals of nuclear 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)
  - 9. Explain strategy of the course in the beginning of the semester
  - 10. Outlines of the Nuclear 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

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 Nuclear physics, such as Nuclear Properties of the matter , Liquid Drop and shell Model , radiation... . 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.

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1 Topics to be Covered :-		
Topics	No of Weeks	Contact hours
1- Nuclear Properties		
1- Definitions & Nuclear radii		1
2- Nuclear Mass-Binding Energy	1	1
3- Nuclear Radiation, Energy levels.		1
4- Nuclear Isomers.		1
5- Angular Momentum, Parity and Symmetry	1	1
6- Dipole moment, qudropole moment		1
2- Liquid Drop Model		
1- Finding Energy	1	1
2- Sem-emperical Formula	1	2
3- Mass Spectrometer	1	1
4- Nuclear Reactions and Q-value	1	2
3- Nuclear Shell Model		
1- Single Particle model with square well and Harmocia		1
Oscillator	1	
2- Magic Numbers	] 1	1
3- Spin for Different nuclei		1
4- Excited rootes nuclear magnetic moments		1
5- Parity	1	2
6- Isotopic spin		1
4- Gamma Transitions		
1- Multiple Moments		1
2- Decay Constants	1	1
3- Selection Nucles		1
4- Angular Correlation	1	2
5- Internal Conversion	1	1
5- Alpha Transitions		
1- Heavy Ions-Stalitlity	1	2
2- Decay Constants	1	1
3- Tunnel Effect	1	2



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6- Beta Transitions		
1- Theorgy of B-decay	1	2
2- Allowed and Forbiddin transitions	1	1
3- Selection Nucles	1	2
4- Non Conservation of Parity	1	1
7- Elementary Particles		
1- Nucler Force and Meson Theory	1	2
2- Pions & Mions	1	1
3- Kaons & Hyperons	1	2
4- Classi Fiction of demeray Pancles	] 1	1
Total	14	42

Course Unit/Credit hours	4 (3+1+0) C. H					
		<b>Contact hours</b>	Private study			
	Lecture	45	60			
Student workload	Practical	42	20			
	Assignments	0	12			
	Exams & Quizzes	8	20			
	Sum	95	112			
	Total Sum:	20	7			
Credit	7 ECTS C.Ps					

2. Course components (total contact hours and credits per semester):									
Lecture Tutorial Laboratory or Studio Practical Other: Total (Exams Quizzes)									
Contact Hours	45	0	0	42	8	95			
Credit 3 0 0 1 0 4									
3. Additional private study/learning hours expected of students per week.									



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#### 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 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	<ol> <li>Solve some example during the lecture.</li> <li>Exams:         <ul> <li>a) Online Quizzes</li> <li>b) First mid-term exam</li> <li>c) Second Mid term exam</li> <li>d) Oral exams</li> <li>e) Final exams</li> </ul> </li> <li>Discussions with the students.</li> <li>Ask the student to clear the misunderstanding of some mathematical principle.</li> <li>Ask quality question</li> </ol>
1.2	Describe concepts, Procedures of some experiments in Nuclear physics.	Demonstrating the basic principle of the Nuclear experiment.     Show the best ways to perform the experiments	Home work. Writing scientific Reports. Doing team research or team project. Doing team work to perform some experiments Discussions during the class.



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		<ul><li>3. Show the best ways to demonstrate the results.</li><li>4. Show the best way to write the reports about the experiment.</li><li>5. Discussion with the student about the results.</li></ul>	
2.0	<b>Cognitive Skills</b>		
2.1	Apply the laws of physics.  Solve problems in Physics by using suitable mathematical principles	Preparing main outlines for teaching     Second secon	Midterm's exam. Exams, short quizzes     Asking about physical laws previously taught     Writing reports on selected parts of the course     A.Discussions of how to simplify or analyze some phenomena
2.3	Analyse and interpret	references 5.Ask the student to attend	
2.4	quantitative results  Express the physical phenomena mathematically.	lectures for practice solving problem	
3.0	Interpersonal Skills	& Responsibility	
3.1	Show responsibility for self-learning to be aware with recent developments in physics  Work effectively in groups and exercise leadership when appropriate.	<ul> <li>Search through the internet and use the library.</li> <li>Lab work.</li> <li>Small group discussion.</li> <li>Enhance educational skills.</li> <li>Develop their interest in Science through: (lab work, field trips, visits to scientific and research.</li> <li>Encourage the student to attend lectures regularly</li> <li>Give students tasks of duties</li> </ul>	<ul> <li>Evaluate the efforts of each student in preparing the report.</li> <li>Evaluate the scientific values of reports.</li> <li>Evaluate the work in team</li> <li>Evaluation of the role of each student in lab group assignment</li> <li>Evaluation of students presentations</li> </ul>
4.0	Communication, In	formation Technology, Numeri	ical
4.1	Communicate effectively in oral and written form Collect and classify the material for a course	<ul> <li>Homework</li> <li>Preparing a report on some topics related to the course depending on web sites.</li> <li>Computation</li> </ul>	<ul> <li>Evaluation of presentations</li> <li>Evaluation of reports</li> <li>Practical exam</li> <li>Homework.</li> <li>Final exams.</li> </ul>
4.3	Use basic physics terminology in English Acquire the skills to use the internet communicates tools.	<ul> <li>Problem solving</li> <li>Data analysis and interpretation.</li> <li>Feeling physical</li> </ul>	



#### **Academic Accreditation & Assessment**

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		reality of results •	
5.0	Psychomotor		
5.1	Use a perfect experimental tools to solve Physics problems in the Labs	Follow up the students in lab and during carryout all experimental work.	<ul> <li>Practical exam.</li> <li>Giving additional marks for the results with high and good accuracy</li> </ul>

5. Map co	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	3.3	3.4	4.1	4.2	4.3	4.4	5.1	5.2
1.1		✓																
1.2			✓															
2.1				✓														
2.2						✓												
2.3							✓											
2.4						✓												
3.1									✓									
3.2										✓								
4.1													✓					
4.2														✓				
4.3															✓			
4.4																✓		
5.1																	✓	



المملكة العربية السعودية الهيئسة الوطنيسة للتقويد والاعتصاد الأكاديم

#### **Academic Accreditation & Assessment**

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Mark	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)

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

#### **E Learning Resources**

- 1. List Required Textbooks
- K. Heyde, Basic ideas and concepts in nuclear Physics, An introductory approach, second edition, Institute of physics publishing, Bristol and Philadelphia (1999) ISBN 0 7503-0534 7 hbk, 07503 0535 pbk.
- Irving Kaplan, Nuclear Physics, Second Edition, Addison-Wesley Publishing Company (1977).
- Kenneth S. Krane, Introductory nuclear Physics, , first edition, Jone Wily & Sons Inc. (1988) ISBN 0 - 471-80553-X.
- Burcham, Nuclear and Particle Physics, 2 Edition, Longman Publisher (1995),ISBN-10:0582 450888 , -13:978 - 0582 4508882
- 2. List Essential References Materials (Journals, Reports, etc.)

## المدال ا

#### المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

- 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) Introductory Nuclear Physics, Krene, 1987
- 4. List Electronic Materials, Web Sites, Facebook, Twitter, etc. www.uqu.sa/ammadani
- 5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
  - Power points (use e-learning gate of Umm Al-Qura university)
  - Youtube videos(use e-learning gate of Umm Al-Qura university)

#### 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, and 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

# المينة الوطالية التقوير والإغتار الإقتارية

#### **Academic Accreditation & Assessment**

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

- 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.M.MADANI							
Signature:	Date Report Completed:						
Name of Field Experience Teaching Staff							
Program Coordinator:Dr. Fahd Al-H	lashmi						
Signature: 2ald. 41-24ashwi	Date Received: 23/4/1439						

**Academic Accreditation & Assessment** 

### المبتع الهالية ويج المبتع الهالية المقاويج والاغتراب الإنقادية

المملكة العربية السعودية الهيئة الوطنية التقويم





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



T6. Course Specifications (CS)



Course title: Solid State Physics 1



Course code: 4034170-4



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

#### **Course Specifications**

Institution: Umm AL – Qura University	Date : 18/1/1439
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: 4034170-4)								
2. Credit hours: <b>4</b> ( <b>3</b> + <b>1</b> + <b>0</b> ) <b>Hrs</b>								
3. Program(s) in which the course is of	fered. BSc	Physics						
(If general elective available in many pr	rograms inc	licate this rather than l	list programs)					
4. Name of faculty member responsible								
		e staff member						
5. Level/year at which this course is of	fered: 3 <sup>rd</sup>	Year / Level 6						
6. Pre-requisites for this course (if any)	: Quantun	Mechanics 1 (code:	4033145-4)					
7. Co-requisites for this course (if any)	:							
8. Location if not on main campus: Ma	in campus	and Alzaher						
9. Mode of Instruction (mark all that ap	oply)							
a. traditional classroom	<b>✓</b>	What percentage?	100%					
b. blended (traditional and online)		What percentage?						
c. e-learning		What percentage?						
d. correspondence What percentage?								
f. other What percentage?								
Comments:								

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#### **B** Objectives

1. What is the main purpose for this course?

After completing this course student should be able to:

- 1. Define the principles and concepts of solid state physics.
- 2. Compare the origin of bonding in materials
- 3. Define the lattice planes & directions.
- 4. Explain the different types of defects in solid state and understand how it affect the physical properties of matter.
- 5. Explain how X-Rays Diffraction can be used in studying the solid structure.
- 6. Define phonons in crystals and distinguish between their different modes
- 7. Choose the right formulas to calculate specific heat & thermal conductivity of the lattice.
- 8. Recognize the main drawbacks of the free electron model in metals.
- 9. Identify: Bloch's theorem, Brillouin zones & Fermi surface in metals.
- 10. Classify different types of solid according to The Band Theory.
- 11. Distinguish between intrinsic & extrinsic Semiconductors and know their properties and applications.
- 12. Recognize the idea behind the Superconductivity phenomenon and be aware of its 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)
- 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 An introduction to the physics governing the different types of binding in solid state materials, Geometry of Solids and crystalline state of matter, Reciprocal Lattice, Brillouin zone, Modern theories describing lattice vibrations, Energy bands, X-Ray Diffraction, Electrons in solids, and Optical properties of solid materials. Free electron theory in metals, band theory, thermal properties of solid materials, Lecture 4 hours..



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المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

1 Topics to be Covered		
Topics	No of	Contact
	Weeks	hours
	vveeks	
<b>❖</b> The atomic Theory and Binding Forces	1.5	6
Review of atomic structure		
Atomic binding and band theory		
Binding forces between atoms		
Lattice Energy Calculations		
Types of bonds		
Nucleation and growth kinetic		
Experimental methods of crystal growth		
❖ Crystal Structure	1.5	6
Long range and short rang order		
The crystalline state		
Basic definitions of crystallography		
The seven crystal systems		
Wigner Seitz primitive cell		
Symmetry elements of crystals		
Important plane systems in a cubic crystals		
Miller's indices for crystal planes		
❖ Crystal Properties	1.5	6
Crystal Directions and distance between crystal plans		
<ul> <li>Zone , Zone Axis and angles between zones</li> </ul>		
Atomic structure of crystals		
Cubic and hexagonal close-packed		
Characteristic of FCC and BCC structure		
The crystal structure of some simple crystals		
❖ Structural Defects in Crystals	1	4
Point defects and Free energy of a crystal		
Point defects in ionic crystals		
Line defects and types of dislocation		
Planer defects		
Determination of vacancies concentration and the activation energy		
<b>❖</b> X-Rays Diffraction in Crystals	1.5	6
11- Used rays in studying crystal structure		
12- Generation and properties of X-rays		
13- X-Rays scattering from an atom		
14- X-Rays scattering from a crystal and Reciprocal lattice		



الهيئة الوطنية للتقويم والاعتماد الأكاديمي

المملكة العربية السعودية

#### **Academic Accreditation & Assessment**

		4
11. Elastic waves		
12. Modes of vibrations and density of states of a continuous medium		
13. The phonon		
14. Elastic and non-elastic scattering		
15. Lattice waves of one-atomic linear chain		
16. Vibration Modes of 1D diatomic		
<b>❖</b> Free electrons in metals	2	8
The Electrical Conductivity in Metals		
2. The Specific Resistance in Metals		
3. The Electrical and Thermal Conductivity in Metals		
4. The Quantum Theory in Free Electrons		
5. Ground State Property of Free Electrons		
6. Electronic Specific Heat of Metals		
7. Some Problems in Free Electron Model		
<b>❖</b> Band theory in the solids	2	8
1. Origin of the Bands in Solid		
2. Periodic Potential		
3. Bloch Function		
4. Crystal Structure in One-Dimensional Atomic Chain		
5. Brillouin Zones		
6. Band Theory in Free Electron Model		
7. Density of States		
8. The Effective Mass		
9. Concept of Holes		
10. Fermi Surfaces		
<b>❖</b> Thermal properties of solid materials	3	12
1. Specific heat:		
2. Einstein model for specific heat,		
3. Debye model for specific heat,		
4. Heat capacity of solid body,		
5. Heat capacity of electron gas,		
6. Thermal conductivity of solid body,		
7. Thermal expansion		
	15	60hrs
	weeks	



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

Course Unit/Credit hours		4 (3+1+0) C. H			
		Contact hours	Private study		
	Lecture	45	50		
Student workload	Practical	42	21		
	Assignments	0	15		
	Exams & Quizzes	8	22		
	Sum	95	108		
	Total Sum: 203				
Credit	7 ECTS C.Ps				

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
			or Studio		(Exams& Quizzes)	
Contact	60	0	0	0	8	68
Hours						
Credit	4	0	0	0	0	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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).



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#### **Academic Accreditation & Assessment**

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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	At the end of the program the student should be able to:  1- List the atomic theory and binding forces  2- Describe the crystal structure  3- Describe the crystal properties  4- List the structural defects in crystals  5- Understand the X-Rays diffraction in crystals  6- Describe the lattice vibrations  7- Understand the free electrons in metals  8- Describe the band theory in the solids  9- Describe the Thermal properties of solid materials	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. Homework. Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams Discussions during the lectures.
2.0	Cognitive Skills		
2.1	Differentiate between the different types of binding in solid materials.  List the different types of crystal structure	Preparing main outlines for teaching	1.Midterm's exam. Exams, short quizzes
2.3	Analyse the electrical and thermal	2.Following some proofs     3.Define duties for each chapter     4.Encourage the student to look for	<ul><li>2.Asking about physical laws previously taught</li><li>3.Writing reports on selected</li></ul>
2.4	Interpret the band theory in solids and Explain methods of measurement and assessment of properties of solids.	the information in different references  5.Ask the student to attend lectures for practice solving problem	parts of the course 4.Discussions of how to simplify or analyze some phenomena
3.0	Interpersonal Skills & Responsibility		
3.1	Evaluate solid state physics information.	Search through the internet and use the library.	Evaluate the efforts of each student in preparing
3.2	Analyse solid state physics data.	Small group discussion.     Enhance educational skills.	the report.  • Evaluate the scientific
3.3	Judge the importance of solid state physics.	Develop their interest in Science through: field trips, visits to	values of reports.  • Evaluate the work in team
3.4	Choose representative examples for each	scientific and research.	Evaluation of students

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#### **National Commission for**



## المملكة العربية السعودية الهيئة الوطنية الوطنية والاعتماد الأكاديمي

	group of solid state physics.	<ul><li>Encourage the student to attend lectures regularly</li><li>Give students tasks of duties</li></ul>	presentations	
4.0	Communication, Information Technolo	gy, Numerical		
4.1	Communicate effectively in oral and written form	Homework     preparing a report on some topics	<ul><li>Evaluation of presentations</li><li>Evaluation of reports</li></ul>	
4.2	Collect and classify the material for a course	related to the course depending on	• Homework.	
4.3	Use basic physics terminology in English	web sites.	• Final exams.	
4.4	Acquire the skills to use the internet communicates tools.			
5.0	Psychomotor			
5.1				



المملكة العربية السعودية الهيئية الوطنيية للتقويم والاعتماد الأكاديمي

5. Map co	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	3.3	3.4	4.1	4.2	4.3	4.4	5.1	5.2
1.1		✓																
1.2			✓															
1.3			✓															
1.4			✓															
1.5			✓															
1.6			✓															
1.7			✓															
1.8			✓															
1.9			✓															
2.1				✓														
2.2					✓													
2.3							✓											
2.4					✓													
3.1									✓									
3.2										✓								
3.3											✓							
3.4												✓						
4.1													✓					
4.2														✓				
4.3															✓			
4.4																✓		

**Academic Accreditation & Assessment** 



المملكة العربية السعودية الهيئة الوطنية التقويم والاعتماد الأكاديمي

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Mark	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)

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 7<sup>th</sup> Ed
  - 2- Walter A. Harrison, Solid State Theory, Dover edition 1979
- 2. List Essential References Materials (Journals, Reports, etc.)

#### **MPP Module Handbook**



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#### **Academic Accreditation & Assessment**

- 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
  - 1- H.P. Myers, Introduction to Solid State Physics, 2<sup>nd</sup> Ed, 2009 Taylor & Francis
  - 2- Elementary Solid State Physics by M. Ali Omar, 1997
- 4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
  - <a href="http://www.phys.lsu.edu/~jarrell/COURSES/SOLID">http://www.phys.lsu.edu/~jarrell/COURSES/SOLID</a> STATE HTML/course solid.html
  - http://www.encyclopedia.com/topic/solid-state physics.aspx
  - http://www.physics.byu.edu/research/condensed
  - <a href="http://web.utk.edu/~tbarnes/website/cm/cm.html">http://web.utk.edu/~tbarnes/website/cm/cm.html</a>
  - http://www.answers.com/topic/solid-state-physics
  - http://www.answers.com/topic/solid-state-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.

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
  - Questionaries



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#### **Academic Accreditation & Assessment**

- 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
  - 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.

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:Loulou Mehrez	
Signature:	Date Report Completed:
Name of Field Experience Teaching Staff	
Program Coordinator:Dr. Fahd	Al-Hashmi
Signature: Fahd Al-Hashmi	Date Received: 23/4/1439



**Academic Accreditation & Assessment** 

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمسى





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



T6. Course Specifications (CS)



Course title: Electromagnetism 1



Course code: 4033132-3



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

#### **Course Specifications**

Institution: Umm AL – Qura University Date : 18/1/1439						
College/Department : College of Appli	ed Science – Department of Physics					
A. Course Identification and General Information						
1. Course title and code: Electromagnetism 1 (Code: 4033132-3)						
2. Credit hours: <b>3 Hrs</b>						
3. Program(s) in which the course is offered. <b>B.Sc. Pure Physics.</b> (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: 3 <sup>nd</sup> Year / Level 6						
6. Pre-requisites for this course (if any): Theoretical Methods in Physics (2) (4032141-4)						
7. Co-requisites for this course (if any): Theoretical Methods in Physics (1) (4033142-4)						
8. Location if not on main campus: Ma	in campus and Alzaher					
9. Mode of Instruction (mark all that ap	oply)					
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:						

# المبتع المحمد التقوير المبتع التقوير المبتع المحمد المبتع المتعوير المبتع

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#### **Academic Accreditation & Assessment**

#### **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.

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المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

Topics  ❖ Electrostatics: 1-Electric Charge 2-Coulomb's law	No of Weeks 2	Contact hours 6
1-Electric Charge		
1-Electric Charge	2	6
1-Electric Charge		
<u> </u>		
3-The Electric Field		
4-Electrostatic Potential		
5-Conductors & Insulators		
6-Gauss's Law		
7-The Electric Dipole		
8-Multipole Expansion		
o Mulupole Expansion	4	12
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.		
	3	9
<b>❖</b> 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.	1	
<ul> <li>Microscopic Theory of Dielectrics</li> <li>1-Molecular Field in Dielectric</li> </ul>	2	6



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2-Induced Dipoles		
3-Polar Molecules		
4-Ferroelectricity		
❖ Electrostatic Energy	1.5	4.5
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.		
<b>*</b> Electric Current	1.5	4.5
1-Current Density & Equation of Continuity		
2-Ohm's Law		
3-Steady Currents in continuous Media		
4-Microscopic Theory of Conduction.		
	15 weeks	45 hrs

Course Unit/Credit hours		3 (3+0+0) C. I	H	
		<b>Contact hours</b>	Private study	
	Lecture	45	60	
Student workload	Practical	0	0	
	Assignments	0	15	
	Exams &	8	20	
	Quizzes			
	Sum	53	95	
	Total Sum:	14	18	
Credit	5 ECTS C.Ps			

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والاعتسماد الأكباديب

#### **Academic Accreditation & Assessment**

2. (	Course components	(total contact hour	s and credits per semester):
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	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams& Quizzez)	Total
Contact Hours	45	0	0	0	8	53
Credit	3	0	0	0	0	3

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

6.33

## **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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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 quantity of electrostatic field and	The methodology of teaching that includes a curriculum design, planning and delivering teaching	<ol> <li>Periodical quizzes, assignments and homework</li> <li>First and second mid- term</li> </ol>

# آبال المحادث المحادث

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

1.2	electric flux  Describe the concepts and theoretical in the electrostatic  Identify the new research and application	and assessment, combination of lectures and web-interactions by the lecturer. These will give the opportunity of students to understand the basic science of the electromagnetic and its different applications in life.  2. Feedback and evaluation that include:  • Flipping the lecture by using quizzes, blackboard, power point and e-learning  • Effective by solve some examples during the lecture  • Reflective learning, multi-cultural of electromagnetic and emotional intelligence.  • Creating productive online electromagnetic for learning and teaching, transition and participation into education.  • Observing teaching and learning and creating productive classroom.  • Small group teaching and assessment learning.  • Designing and implementing an 'outcomes-based' curriculum.  • Teaching for reflective learning and research methods.  • Seminar presentation and on-line learning process with (images and movies)  • Collect the new information about what the new in electromagnetic  • Enable the reference books and scientific sites concerning electromagnetic and its application	exam and final exam  3. Emphasis of the students in the presence of the lecture continuously  4. Making the students are working small projects and report for electromagnetically and its applications around us.  5. Ask the student to clear the miss understanding of the course
		scientific sites concerning	
2.0	Cognitive Skills		
2.1	Analyze the different formation and sources of electrostatic.  Apply the theoretical laws and principles	<ol> <li>Preparing main outlines for teaching in the starting of the lecture</li> <li>Define tasks for each chapter</li> <li>Open discussions during the</li> </ol>	All exams and short quizzes must contain questions that can measure these skills.     Asking the students about physical meaning and laws
2.3	relevant to electrostatic  Demonstrate a reasoned argument to simplify problems and analyze	lectures 4. Brain storming, group work, homework assignments and small project	previously taught 3. Emphasize the student writing reports on selected parts of the course



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	phenomena in electrostatic.	5. Encourage the student to look for the information in different sources	4. Discussions of how to simplify or analyses after the lecture
2.4	Critically assess, evaluate, explain the idea with the student own words, identify, formulate and solve the electrostatic represent the problems mathematically		
3.0	Interpersonal Skills &	Responsibility	
3.1	Learn independently and take up responsibility	Learn how to search the internet and use the library     Teamwork and small group	Making quizzes on the previous lecture.     Checking report and
3.2	Fluent in dealing with others and collaborative work.	discussion 3. Interactive learning 4. Case Study	evaluate the efforts and scientific values of each student in preparing report.  3. Mini project and evaluate
3.3	Plan, design, record, execute and communicate a piece of independent research in electrostatic		the work in team 4. Evaluation of the role of each student in teamwork assignment 5. Assignments and
3.4	Respond to the change of electromagnetic information and analyses electrostatic data.		evaluation of students presentations
3.5	Choose representative examples for each group of electrostatic.		
4.0	Communication, Info	rmation Technology, Numerical	
4.1	Enhance the ability of students to use computers and internet.	<ol> <li>Know the basic physical principles of electromagnetic.</li> <li>Discuss with the student</li> </ol>	Their interaction with the lectures and discussions     Evaluation of presentations
4.2	Demonstrate the physical phenomena, present physical phenomena orally	<ul> <li>3. Homework (preparing a report on some topics related to the course depending on web sites).</li> <li>4. Seminars presentation</li> <li>5. Field visits to laboratory and factories</li> </ul>	<ul><li>3. Evaluation of reports</li><li>4. Oral discussion</li></ul>
4.3	Know how to write a report.	2. Tied tiens to insolutory and factories	
4.4	Computation and problem solving		



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4.5	Data analysis and interpretation and feeling physical reality of results	
5.0	Psychomotor	
5.1	NA	

Course LOs #	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1	5.2
1.1	✓																	
1.2		✓																
1.3			<b>√</b>															
1.4																		
2.1				<b>√</b>														
2.2					✓													
2.3						✓												
2.4							✓											
2.5																		
3.1									<b>✓</b>									
3.2										✓								
3.3											<b>✓</b>							
3.4												<b>√</b>						
3.5																		
4.1													✓					
4.2														✓				
4.3															✓			
4.4																✓		
4.5																		
5.1																		
5.2																		

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المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	30 %
3	Mid Term Exam (practical)			
4	Reports and essay	11		20 %
5	Final Practical Exam			
6	Final Exam	16	120 min	40 %
	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)

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], 3<sup>rd</sup> 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] 4<sup>th</sup> Edition
  - Electromagnetic Fields and Waves by Paul Lorrain, Dale R. Corson, François Lorrain [W. H.



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

Freeman and Company, 1988] 3<sup>rd</sup> 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



## المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

- 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: M. BOUSTI	IMI
Signature:	Date Report Completed:
Name of Field Experience Teaching Staff	
Program Coordinator:Dr. Fahd	Al-Hashmi
Signature: Jahd Al-Hashmi	Date Received: 23/4/1439



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

**Academic Accreditation & Assessment** 





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



T6. Course Specifications (CS)



Course title: Health Physics



Course code: 4033283-3



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#### **Academic Accreditation & Assessment**

### **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: 4033283-3)						
2. Credit hours: <b>3</b> ( <b>2</b> + <b>1</b> + <b>0</b> ) <b>Hrs</b>						
<ul> <li>3. Program(s) in which the course is offered. B.Sc Medical Physics</li> <li>(If general elective available in many programs indicate this rather than list programs)</li> <li>4. Name of faculty member responsible for the course</li> </ul>						
5. Level/year at which this course is offered: 6 <sup>th</sup> Level /3 <sup>rd</sup> Year						
6. Pre-requisites for this course (if any): Radiation Medical physics (4033285-4)						
7. Co-requisites for this course (if any): <b>NIL</b>						
8. Location if not on main campus: Main male campus (Abdeia) and Alzaher female						
9. Mode of Instruction (mark all that apply)						
a. traditional classroom   What percentage? 60%						
b. blended (traditional and online) What percentage?						
c. e-learning What percentage? 20%						
d. correspondence What percentage?						
f. other What percentage?						
Comments:						

# المنتق الوطنية التقوير المنتق الوطنية التقوير والمنتق الوطنية التقوير والمنتق والمنتق

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

#### **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

الله المحادث المحادث

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



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



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#### **Academic Accreditation & Assessment**

Course Units/Credit Hours	3	(3+0+0) C. H	
		<b>Contact hours</b>	Private study
	Lecture	45	60
	Assignments	0	15
Student workload	Practical	0	0
	Exams & Quizzes	8	21
	Sum	53	96
	Total Sum 149		9
Credits		5 ECTS C.Ps	

2. Course components (total contact hours and credits per semester):								
	Lecture	Tutorial	Laboratory	Practical	Other:	Total		
			or Studio		(Exams,			
					Assignments and			
					Quizzes)			
Contact	45	0	0	0	8	53		
Hours								
Credit	3	0	0	0	0	3		
3. Additional private study/learning hours expected of students per week.  6.33								

## **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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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.)

# المينة الوطانية التقوير المنات الوطانية التقوير والإغتمار الإنجاميية

#### **Academic Accreditation & Assessment**

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Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods		
1.0	Knowledge				
1.1	List Transformation Mechanisms and Kinetics  Recognize occupational and public		Solve some example during the lecture.		
1.2	exposure limits in addition to the safety requirement	Lectures	<ul><li>b) Quizzes</li><li>c) Short exams (mid- term</li></ul>		
1.3	Outline the Different Types of Health Physics Instrumentations	<ul><li> Tutorials</li><li> Individual Assignment</li><li> Discussions</li></ul>	exams) d) Long exams (final) e) Discussions during the lectures.		
1.4	Recognize the Types of Radioactive Wastes and Environmental Monitoring Program		f) Home work. g) Write a Report		
2.0	Cognitive Skills				
2.1	The ability to explain the different types of radiation interactions with matter		a) Aissgnments included		
2.2	The ability to analyze merits and drawbacks of different health physics instrumentatios	Analatyical problems in field     Individual and Group	some open end tasks b) Problem solving skills c) Emergency case study d) Homework		
2.3	The ability to design X-ray shielding of radiographic and cardiac medical rooms.	Assignents 3. Group Discussions	e) Final exam f) Short exams g) Reports		
2.4	The ability to explain the international dispersal of radioactive materials and the accident sequence.				
3.0	Interpersonal Skills & Responsibili	ty			
3.1	Write a plan for packing and transporting a radioactive wastes	Writing an essay     Presentations in some selected topics     Small Group Discussion.	<ul><li>a) Essay (Group Assessment)</li><li>b) Presentations (individual and Group Assessment)</li><li>c) Homework</li></ul>		
3.2	Choose the appropriate detector for monitoring and survying	4. Visits to Hospitals to Improve Students' Expert in Field	d) Final exam e) Report in field (Individual Assessment)		



الهيئة الوطنية للتقويم

المملكة العربية السعودية

والاعتماد الأكاديمي

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

Course LOs #	5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)																	
LO3 #	1.1	1.2	1.3	1.4		2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1
1.1				✓														
1.2					✓													
1.3	✓																	
1.4					<b>√</b>													
2.1						✓												
2.2							✓											
2.3								✓										
2.4									✓									
3.1										<b>\</b>	✓							
3.2											✓		✓					
4.1														<b>✓</b>		✓		
4.2															✓	✓		
4.3																✓		
5.1																		

# شار المحمد المح

المملكة العربية السعودية الهيئة التقويم الهيئة الوطنيسة التقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Fina Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	30 %
3	Mid Term Exam (practical)			
4	Reports and essay	11		20 %
5	Final Practical Exam			
6	Final Exam	16	120 min	40 %
	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)

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. Herman Cember and Thomas E. Johnson "Introduction to Health Physics" 4th Eds. McGraw-Hill. **2009**. (Electronic + Hard Copies)
- 3. 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)



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

- 3- Joseph Magill & Jean Galy "Radioactivity · Radionuclides · Radiation", 1<sup>st</sup> Ed., Springer, 2005.
- 4- Michael G. Stabin. "Radiation Protection and Dosimetry", 1st Ed., Springer, 2007.
- 4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
  - <a href="http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-wastes/radioactive-waste-management.aspx">http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-wastes/radioactive-waste-management.aspx</a>
  - <a href="https://quizlet.com/24704162/radiography-health-physics-flash-cards/">https://quizlet.com/24704162/radiography-health-physics-flash-cards/</a>
  - https://quizlet.com/217730233/rb-4-health-physics-flash-cards/
  - <a href="https://www.iaea.org/OurWork/ST/NE/NEFW/home.html">https://www.iaea.org/OurWork/ST/NE/NEFW/home.html</a>
  - <a href="http://www.icrp.org/">http://www.icrp.org/</a>
  - <a href="https://en.wikipedia.org/wiki/Health\_physics">https://en.wikipedia.org/wiki/Health\_physics</a>
- 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



المملكة العربية السعودية الهيئة الوطنية

والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

- 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.
  - 3- The following points may help to get the course effectiveness
    - Student evaluation
    - Course report
    - Program report
    - Program Self study

Name of Instructor: Dr. Hanan Amer

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

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

Name of Field Experience Teaching Staff: Dr/ Taha M. El-fawal (male campus),

Program Coordinator: \_\_\_\_\_Dr. Fahd Al-Hashmi \_\_\_\_\_

Signature: 7ahd Al-Hashmi \_\_\_\_\_

Date Received: 23/4/1439



**Academic Accreditation & Assessment** 

المملكة العربية السعودية الهيئة الوطنية التقويم والاعتماد الأكاديمي

#### **Level Seven**

The Holy Qur'aan (3) 605301-2

Physics of Biomaterial 4034286-3

Physics of Nuclear Medicine 4034295-4

Physics of Medical Imaging 4034289-3

Computer Application in Medical Physics 4034291-2

Physics of Radiotherapy 4034286-4

#### **Kingdom of Saudi Arabia**

#### **National Commission for**



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

Course: The Holy Qur'aan (3) Code: 601101-2



الملخة العربية السعودية وزارة التعليم العالي **جامعة أم القري** كلية الدعوة وأصول الدين

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 مراعـاة 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 .

#### Kingdom of Saudi Arabia

#### **National Commission for**



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**



المطعة العربية السعودية وزارة التعليم العالي جامعة أم القري كلية الدعوة وأصول الدين

#### المرجع:

البرهان في تجويد القرآن للشيخ / محمد الصادق قمحاوي .

#### المراجع الأخرى:

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

#### رابعاً :المفظ:

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



#### **Academic Accreditation & Assessment**

المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي

Course Units/Credit Hours	2 (2+0+0) C. H				
		<b>Contact hours</b>	Private study		
	Lecture	30	30		
	Assignments	0	10		
Student workload	Practical	0	0		
	Exams & Quizzes	4	15		
	Sum	34	55		
	Total Sum	89			
Credits	<b>3</b> ECTS C.Ps				

2. Course components (total contact hours and credits per semester):									
	Lecture	Tutorial	Laboratory	Practical	Other:	Total			
	or Studio (Exams,								
	Assignments and								
	Quizzes)								
Contact	30	0	0	0	4	34			
Hours									
Credit	2	0	0	0	0	2			
3. Additional private study/learning hours expected of students per week.  3.8									





المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتصاد الأكاديم





#### 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: 4034295-4



This form Compatible with NCAAA 2013 Edition



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

### **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								
A. Course Identification and General I	mormation	u						
1 G 1 1 N AV			<b>-</b> A					
1. Course title and code: Physics of Nuclear Medicine (code: 4034295-4)								
2. Credit hours: <b>4</b> ( <b>3</b> + <b>1</b> + <b>0</b> ) <b>Hrs</b>								
3. Program(s) in which the course is of (If general elective available in many program of the course is of t		•	list programs)					
(ii general elective available iii many pr	ograms mu	icate this rather than.	nst programs)					
4. Name of faculty member responsible								
5. Level/year at which this course is of	madan. A.							
3. Level/year at which this course is on	Level	17/4 year						
6. Pre-requisites for this course (if any)	: Nuclear F	Physics / Code: 4034	160-4					
7. Co-requisites for this course (if any)	: NIL							
8. Location if not on main campus: Ma	in male car	mpus (Abdeia) and A	Alzaher female					
<ul><li>9. Mode of Instruction (mark all that approximately strength)</li></ul>	nnly)							
7. Wode of histraction (mark an that ap	ppry)							
a. traditional classroom	✓	What percentage?	80%					
b. blended (traditional and online)	<b>✓</b>	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%].								

#### Academic Accreditation & Assessment



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **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.



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

1	Topics to be Covered		
	Topics	No of	Contact
		Weeks	hours
*	Basic of Nuclear Medicine Physics,	1	3
	1. Isotopes, Isotones, and Isobars		
	2. Radioactive transformations		
	3. Radioactivity		
	4. Half & average life		
	Solved problems, Quizzes and homework exercises		
*	Formation of Radionuclides,	2	6
	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		
*	Nonscintillation Detectors,	2	6
	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		
*	Nonimaging Scintillation Detectors,	2	6
	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		
*	Imaging Instrumentation,	2	6
	1- Radiation Scanners & Gamma camera		
	2- Positron emission tomography		
	Solved problems, Quizzes and homework exercises		
	1 <sup>st</sup> Class Test Exam		
*	Radioisotopes medical applications	2	6
	1- Uses of Radioisotopes in The Study of Metabolic pathway		
	2- Radioimmunoassay (RIA)		
	3- Radiotherapy		
	Solved problems, Quizzes and homework exercises		
Ь		l	l



المملكة العربية السعودية

الهيئة الوطنية للتقويم

والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

<ul> <li>Quality Control</li> <li>Nonimaging Devices (Dose Calibrator, Survey Meters, Crystal Scintillation Counters)</li> <li>Imaging Devices (Planar Gamma Camera)</li> <li>Solved problems, Quizzes and homework exercises</li> </ul>	2	6
<ul> <li>Radiation protection in nuclear medicine         <ul> <li>Limiting of External &amp; Internal Exposure</li> </ul> </li> <li>Solved problems, Quizzes and homework exercises</li> <li>Revision and Solved problems</li> <li>2<sup>nd</sup> Class Test Exam</li> </ul>	2	3
	15 weeks	45 hrs

## Practical part: Practical part:

racticai j	part:	
LAB#	1.	Radioactive decay calculation
LAB#	2.	Radioactive decay (rad pro simulation)
LAB#	3.	Cs-137/Ba-137m isotope generator
LAB#	4.	Abilities of $\alpha$ , $\beta$ and $\gamma$ rays to pass through the air; (rad lab sim.)
LAB#	5.	Determining the Effect of thickness of Absorber; (rad lab sim.)
LAB#	6.	Determining the Effect of types of Absorber; (rad lab sim.)
LAB#	7.	Effect of voltage on GM;(rad lab sim.)
LAB#	8.	Rad lab gamma spectroscopy software
LAB#	9.	Dose Calibrator quality control (QC)
LAB#	10.	Survey Meters quality control (QC)
LAB#	11.	Scintillation counter energy Calibration
LAB#	12.	Crystal Scintillation Detectors: Well Counters;

Course Unit/Credit hours	4 (3+1+0) C. H					
		<b>Contact hours</b>	Private study			
	Lecture	45	60			
Student workload	Practical	42	20			
	Assignments	0	15			
	Exams & Quizzes	8	20			
	Sum	95	115			
	Total Sum:	2	10			
Credit		7 ECTS C.Ps				

## المينة الوطلية التقوير المتالكة التقوير والمتالكة التقوير والمتالكة والمتال

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

2. Course components (total contact hours and credits per semester):								
	Lecture	Tutorial	Laboratory	Practical	Other:	Total		
			or		( Exams			
			Studio		&Quizzes)			
Contact	45	0	0	42	8	95		
Hours								
Credit	3	0	0	1	0	4		
3. Additional	private study	/learning h	ours expected o	of students pe	r week. <b>7.67</b>			

## **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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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	Solve some example during the lecture. Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

		6. Start each chapter by general idea and the benefit of it.	Discussions during the lectures.
1.2	Describe concepts, Procedures of some experiments in Nuclear Medicine Physics.	<ol> <li>Demonstrating the basic principle of the experiment.</li> <li>Show the best ways to perform the experiments</li> <li>Show the best ways to demonstrate the results.</li> <li>Show the best way to write the reports about the experiment.</li> <li>Discussion with the student about the results.</li> </ol>	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.  Solve problems by using suitable	<ol> <li>Preparing main outlines for teaching</li> <li>Following some proofs</li> <li>Define duties for each chapter</li> </ol>	1.Midterm's exam. Exams, short quizzes 2.Asking about physical laws
2.3	mathematical principles  Analyse and interpret quantitative	4.Encourage the student to look for the information in different references	previously taught  3.Writing reports on selected
2.4	results  Express the phenomena mathematically.	5.Ask the student to attend lectures for practice solving problem	parts of the course 4.Discussions of how to simplify or analyze some phenomena
3.0	Interpersonal Skills & Respons	sibility	
3.1	Show responsibility for self- learning to be aware with recent developments in physics	<ul> <li>Search through the internet and use the library.</li> <li>Lab work.</li> </ul>	• Evaluate the efforts of each student in preparing the report.
3.2	Work effectively in groups and exercise leadership when appropriate.	<ul> <li>Small group discussion.</li> <li>Enhance educational skills.</li> <li>Develop their interest in Science through: (lab work, field trips, visits to scientific and research.</li> <li>Encourage the student to attend lectures regularly</li> <li>Give students tasks of duties</li> </ul>	<ul> <li>Evaluate the scientific values of reports.</li> <li>Evaluate the work in team</li> <li>Evaluation of the role of each student in lab group assignment</li> <li>Evaluation of student's presentations</li> </ul>
4.0	Communication, Information	Fechnology, Numerical	
4.1	Communicate effectively in oral and written form	Homework     preparing a report on some topics	<ul><li>Evaluation of presentations</li><li>Evaluation of reports</li></ul>
4.2	Collect and classify the material for a course	related to the course depending on web sites.	<ul><li>Practical exam</li><li>Homework.</li></ul>
4.3	Use basic physics terminology in English		• Final exams.
4.4	Acquire the skills to use the internet communicates tools.		
5.0			

# المبتدة المحمد الاقتصاد الاقت

**Academic Accreditation & Assessment** 

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

		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	1.4	1.5	1.6	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1
1.1	✓		✓																
1.2			✓		✓	✓													
1.3	✓	✓		<b>√</b>															
2.1							✓	✓	✓		✓								
2.2							<b>√</b>				✓								
2.3									✓										
2.4								✓	✓		✓								
2.5							✓												
3.1												✓	✓						
3.2												✓	✓						
4.1																✓	✓		
4.2																✓	✓		
4.3																	✓		
4.4																✓			
5.1																			

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Mark	100%		

## المبنة المراجعة المر

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

#### 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, 3<sup>rd</sup> 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 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)



المملكة العربية السعودية الهيئة الوطنية للتقويم

والاعتماد الأكادي

#### **Academic Accreditation & Assessment**

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: _	R. A. Hassan	
Signature:	Ramadan Ali	Date Report Completed: 23/4/1439
Name of Field Exper	ience Teaching Staff	
Program Coordinator:	Dr. Fahd Al-Hashm	ıi
Signature: 7ahd Al-A	Fashmi	Date Received: 23/4/1439

**Academic Accreditation & Assessment** 



المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمي





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





Course Specifications (CS)



Program: Medical Physics



Course title: Physics of Medical Imaging





Course code: 4034289-3



This form Compatible with NCAAA 2013 Edition



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

#### **Course Specifications**

Institution: Umm AL – Qura Universi	ity Date: 17-4-1439
College/Department : College of Appli	ied Science – Department of Physics
A. Course Identification and General l	Information
1. Course title and code: Physics of Mo	Iedical Imaging (Code: 4034289-3)
2. Credit hours: <b>3 (2+1+0) Hrs</b>	
3. Program(s) in which the course is of	•
4. Name of faculty member responsible	programs indicate this rather than list programs) le for the course
	Dr. Hanan Amer
5. Level/year at which this course is of	ffered: 7 <sup>th</sup> Level / 4 <sup>th</sup> Year
6. Pre-requisites for this course (if any)	y): Radiation Medical Physics (2) (4033292-4)
7. Co-requisites for this course (if any)	): NIL
•	ain male campus (Abdeia) and Alzaher female
<ul><li>campus.</li><li>9. Mode of Instruction (mark all that approximately properties)</li></ul>	upply)
a. traditional classroom	✓ What percentage? 60%
a. traditional classroom	The personage is
b. blended (traditional and online)	What percentage?
c. e-learning	✓ What percentage? 20%
d. correspondence	What percentage?
f. other	What percentage?
Comments:	

### المرتف الوطانية التمويز المرتف الوطانية التمويز والإغتمال الإنقادية

المملكة العربية السعودية الهيئة الوطنية

والاعتسماد الأكبادي

#### **Academic Accreditation & Assessment**

#### **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.

المنافق المنا

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

Topics	No of Weeks	Contac hours
<b>❖</b> Introduction to digital image		
<ul> <li>processing</li> </ul>	_	_
Digital images	2	6
• Image quality		
Basic image operations		
❖ X-ray Radiography		
• X-ray tube		
• Interaction with matter		
• X-ray detectors	3	9
Dual-energy imaging     Trace and its	3	
<ul><li>Image quality</li><li>Equipment</li></ul>		
Clinical use		
Biologic effects and safety		
<b>❖</b> X-ray Computed Tomography		
X-ray detectors in CT		
• Imaging		
• Cardiac CT		
• Dual-energy CT	3	9
• Image quality		
• Equipment		
• Clinical use		
Biologic effects and safety		
Magnetic resonance imaging		
<ul> <li>Physics of the transmitted signal</li> </ul>		
Interaction with tissue		
Signal detection and detector		
Imaging	3	9
Imaging     Image quality		
• Equipment		
<ul><li>Clinical use</li><li>Biologic effects and safety</li></ul>		
▶ Nuclear Imaging (PET/SPECT)		
• image quality	3	9
• Equipment		
Clinical use  Pipe of sets and sefets.		
Biologic effects and safety.      Standards Proceedings School Handle Physics Transits		_
<b>Students Presentations in Selected Health Physics Topics</b>	1	3
	15	45 hr
	weeks	45 111

### المنتق الوطل بية التقوير بالمنتق الوطل بية التقوير والإعتماد الإنقادين

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

Course Units/Credit Hours	3 (3+0+0) C. H					
		<b>Contact hours</b>	Private study			
	Lecture	45	60			
	Assignments	0	15			
Student workload	Practical	0	0			
	Exams & Quizzes	8	20			
	Sum	53	95			
	Total Sum	148				
Credits	<b>5</b> ECTS C.Ps					

2. Course components (total contact hours and credits per semester):									
	Lecture	Tutorial	Laboratory	Practical	Other:	Total			
			or Studio		(Exams,				
					Assignments and				
					Quizzes)				
Contact Hours	45	0	0	0	8	53			
Credit	3	0	0	0	0	3			
3. Additional private study/learning hours expected of students per week.  6.33									

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	<ul><li>Lectures</li><li>Tutorials</li></ul>	h) Solve some example during the lecture.
1.2	Recognize the basic physical principles of different imaging modalities.	<ul><li>Individual Assignment</li><li>Discussions</li></ul>	<ul><li>i) Quizzes</li><li>j) Short exams (mid- term exams)</li><li>k) Long exams (final)</li></ul>



المملكة العربية السعودية الهيئة الوطنية الوطنية والاعتماد الأكاديمي

1.3	Outline the merits and drawbacks of each imaging modality		l) Discussions during the lectures. m) Home work.			
2.0	Cognitive Skills					
2.1	The ability Solve problems related to the mathematical principles of the imaging modality		h) Aissgnments included some open end tasks			
2.2	The ability to Analyze different artefacts of images of different imaging modalities	4. Analatyical problems in field	<ul><li>i) Open ended tasks (Image analyzation)</li><li>j) Image j application on some</li></ul>			
2.3	The ability Compare between the properties of different imaging modes and their medical applications.	<ul><li>5. Individual and Group Assignments</li><li>6. Group Discussions</li></ul>	images of different modalities k) Homework l) Final exam 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	f) Essay (Group Assessment) g) Presentations (individual and Group			
3.2	Choose the appropriate imaging modalities for selected clinical situations	<ul><li>7. Small Group     Discussion.</li><li>8. Visits to Hospitals     to Improve     Students' Expert in     Field</li></ul>	Assessment) h) Homework i) Final exam j) Report in field (Individual Assessment)			
4.0	Communication, Information Technology,	Numerical				
4.1	Demonstrate the image processing using ImageJ software.	5. Group Discussions	d) Essay (Group Assessment) e) Presentations (individual and Group			
4.2	Interpret the difference in image quality of different imaging modes	6. Reports 7. Presentations 8. Accidental Case	Assessment) f) Report in field (Individual Assessment)			
4.3	Illustrate the Protocol of optimum setup of different imaging modes for selected clinical situations	Study	g) Image quality evaluation using ImageJ software			



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

5.0	Psychomotor		
5.1	N/A	N/A	N/A

Course LOs #																			
	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1
1.1			<b>√</b>																
1.2					✓														
1.3				✓		<b>√</b>													
2.1							✓												
2.2							<b>√</b>	✓											
2.3									✓	✓									
3.1												<b>√</b>		✓					
3.2											✓		✓						
4.1															✓		✓		
4.2																✓	✓		
4.3																		✓	
5.1																			

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Mark	100%		

**Academic Accreditation & Assessment** 



المملكة العربية السعودية الهيئسة الوطنيسة للتقويس والاعتصاد الأكاديم

#### 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. 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", 1<sup>st</sup> Eds., Springer, 2013. (Electronic copy)
- 2. List Essential References Materials (Journals, Reports, etc.)
- 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
  - 5- Augusto Giussani and Christoph Hoeschen " Imaging in Nuclear Medicine ", 1st Ed., Springer, 2013.
  - 6- Paul Suetens. "Fundamentals of Medical Imaging", 2<sup>nd</sup> Ed., Cambridge University Press,
- 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

#### **Academic Accreditation & Assessment**



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### 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.



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

- 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: Dr. Hanan Amer

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

Name of Field Experience Teaching Staff: Dr/ Taha M. El-fawal (male campus),

Program Coordinator: \_\_\_\_\_ Dr. Fahd Al-Hashmi

Signature: **7ahd Al-Hashmi** Date Received: 23/4/1439

### المنتق الوطنية التقوير المنتق الوطنية التقوير والاغتصاد الإنقادينية

المملكة العربية السعودية الهيئية الوطنية الوطنية التقويم الاعت ماد الأكاد مد







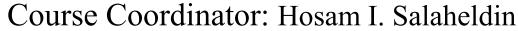
## Kingdom of Saudi Arabia The National Commission for Academic Accreditation & Assessment



Course Specifications (CS)

Program: Medical Physics

Course title: Computer Application in Medical Physics





Course code: 4034291-2



This form Compatible with NCAAA 2013 Edition



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

Institution: Umm AL – Qura University

#### **Course Specifications**

Date: 17/4/1439

College/Department: College of Applie	d Science –	<b>Department of P</b>	hysics		
A. Course Identification and General I	nformation				
A. Course Identification and General I	mormanon				
1. Course title: Computer Application	s in Medica	al Physics	Course Code: 4034291-2		
2. Credit hours: 2 (2+0+0) Hr		1 10 1			
3. Program(s) in which the course is off (If general elective available in many program (s) and some course is off the course is of the course is off the course is of the course is off the course is off the course is of the course is of the course is off the course is off the course is of the course is of the course is off the course is of		,	•		
(ii general elective available iii many pro	ograms mur	cate tins rather tha	iii iist programs)		
4. Course Language: English					
5. Name of faculty member responsible					
6. Level/year at which this course is off		din Ibrahim 7 / 4 <sup>th</sup> Year			
7. Prerequisites for this course (if any):	Radiation 1	Medical Physics (	2) (4033292-4)		
8. Co-requisites for this course (if any):	NIL				
9. Location, if not on the main campus:	Main camp	ous (Abdeia) and	Alzaher campus		
10. Mode of Instruction (mark all that a	pply)				
A. Traditional classroom	V	What percentage	e? <b>80%</b>		
B. Blended (traditional and online)	٧	What percentage	? 20%		
C. E-learning		What percentage	?		
D. Correspondence		What percentage	2?		
F. Other		What percentage	e?		
Comments: The mode of instruction is distributed and used two items [Traditional classroom with 80%, and 20% blended (traditional and online)]					



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#### **Academic Accreditation & Assessment**

#### **B** Objectives

#### 4. 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 teamworking 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)	1	2
Binary form Conversions between decimal and binary forms		



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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	2	4
Quiz 1		
Quiz 2		4
Computer in Imaging, Nuclear Medicine Pulse-Height Analyzer	2	4
Digital Image Formats in Nuclear Medicine		
Nuclear medicine, computers is used for:		
• The Data Acquisition,		
• Data Storage.		
• Processing of Data.		
Formation of digital images.		4
Display, Conversion of a Digital Image into an Analog Video Signal. Grayscale Cathode Ray Tube Monitors.	2	4
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  1 <sup>st</sup> Class Test Exam		
	2	4
Information & Communication Technologies (ICT) and medicine	_	•
Patient records		
Medical equipments		
• Research		
Web-based diagnosis		
• Expert systems		
• Communications		
Computers and the disabled		
Digital Image Processing	2	4
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		



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#### **Academic Accreditation & Assessment**

Histograms	2	4
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		
2 <sup>nd</sup> Class Test Exam		
Smoothing Filters	2	4
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		
	15	<b>30 hr</b>
	weeks	

Course Units/Credit Hours	Lecture: 2 credit hours				
		<b>Contact hours</b>	Private study		
	Lecture	30	45		
	Assignments	0	15		
	Practical	0	0		
Student workload	Exams & Quizzes	8	20		
Statent Workload	Sum	38	80		
	Total Sum	118			
Credits	4 ECTS C.Ps				

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



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#### **Academic Accreditation & Assessment**

	Lecture	Tutorial	Laboratory	Practical	Other:	Total		
			or Studio		(Exams,			
					Assignments and			
					Quizzes)			
Contact	30	0	0	0	8	38		
Hours								
Credit	2	0	0	0	0	2		
3. Additional private study/learning hours expected of students per week.  5.33								
					3.33			

## **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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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 stud	dent should be able to:	
1.1	Define the basic knowledge of	- Classroom lectures	- Graded homework.
	computer related to the medical signal and/or image	- Tutorials and	- Assignments.
	processing.	independent study	- Quizzes.
1.2	Outline the basic information & communication technologies	assignments	- Oral Group Discussion.
	(ICT) related to medicine.	- Individually hand written	- Class tests (e.g. 15 minute
1.3	State various image quality enhancement techniques.	assignments required use	multiple choice test on
1.4	Recognize how to improve and	of library reference	content on completion of each
	develop the medical signal and /or image related to essential	material and web sites to	topic) with a defined ratio of



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	1:00		1 6 1
	different medical imaging (e.g. nuclear medicine, MRI,	identify the information	the final assessment of the
	nuclear medicine, MRI, ophthalmic and US image	required to complete	course. Multiple choice
	processing).	tasks.	knowledge item on final exam
		- E-learning through the	
		university website.	
2.0	Cognitive Skills	1	
2.1	At the end of this course the stu Summarize general areas of		- Graded homework.
2.1	image processing.	- Explain and justify several unsolved examples and	
2.2	Compare between low pass	unsolved problems in	- Class exams.
	filter and high pass filter.	lecture under the	- Final Exam.
2.3	Differentiate between	supervision of the	- Group and individual
	Clipping, Point Operations	<ul><li>instructor.</li><li>Encourage the students to</li></ul>	assignments require
2.4	and Look-Up Table (LUT).	analyze and enhance the	,
2.4	Design different codes using a programming language to locate	medical images using	application of analytical tools
	and enhance the medical signal	certain image processing	in problem solving tasks.
	and/or image.	program packages (e.g.	- Class participation.
2.5	Differentiate between	MATLAB, Image J software).	
	different types of	boitmaio).	
2.6	Histograms Explain linear smoothing		
2.0	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.	aibility	
3.0	Interpersonal Skills & Responsi	· · · · · ·	
3.1	Work effectively in groups as	- Discuss with students.	- Evaluation of group reports
	well as individuals.	- Group presentation.	and individual contribution
3.2	Justify a short report in a written	- Group assignment (the	
	form and/or orally using	instructor should meet with	within the group.
	appropriate scientific language.	each group part way through	- Peer or self assessment.
		project to discuss and advise on approach to the tasks).	- Evaluation of the capacity for
		- Individual student assignment	independent study which
		or report carries out using the	could be assessed in
		internet and/or library as a	individual assignments.
		source of search.	marvidua assignments.

### العينة الوطلية التقوير العينة الوطلية التقوير والاعتصاد الإنقادية

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

4.0	Communication, Information 'At the end of this course the stu		
4.1	Illustrate information technology and modern computer tools to locate and retrieve scientific information relevant to computing in medicine.	<ul> <li>Essay questions</li> <li>Group presentation</li> <li>Encouraging assays, reports and presentations.</li> <li>Encourage the student to</li> </ul>	<ul> <li>Assessments of student's assignments.</li> <li>Evaluation of group reports and individual contribution within the group.</li> </ul>
4.2	Appraise the cooperation through teamwork to assess and criticize various emergent problems.	use the modern Information and Communication Technology (ICT) tools to	<ul><li>Reports and presentations.</li><li>Instructor's feedback</li><li>Final and short exams include</li></ul>
4.3	Interpret the defined noise and artifacts an in the medical images to be improved using different signal and/or image processing package.	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.	different problems which need numerical and technical skills.
5.0	Psychomotor		
5.1	Not applicable (N/A)	N/A	N/A

	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	1.4	1.5	1.6	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1
1.1	✓		✓																
1.2					✓	✓													
1.3	✓			✓															
1.4		✓				✓													
2.1							✓	✓	✓		✓								
2.2							<b>√</b>				✓								
2.3									✓										
2.4								✓	✓		✓								
2.5							✓												
2.6										✓									



المملكة العربية السعودية

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والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

2.7															
3.1										✓		✓			
3.2										<b>✓</b>		✓			
4.1													✓	✓	
4.2													✓	✓	
4.3														✓	
5.1	N. A														

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	30 %
3	Mid Term Exam (practical)			
4	Reports and essay	11		20 %
5	Final Practical Exam			
6	Final Exam	16	120 min	40 %
	Total Marks			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)

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

# المستعالية التمويج المتعالجة المتعا

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#### **Academic Accreditation & Assessment**

- 1. Rachel A. Powsner, Edward R. Powsner, Essentials of Nuclear Medicine Physics and Instrumentation, A John Wiley & Sons, Ltd, 3<sup>rd</sup> 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, 3<sup>rd</sup> Ed (2008).
- 4. List Electronic Materials, Web Sites, Facebook, Twitter, ......etc.)
  - <a href="https://www.mathworks.com/products.html">https://www.mathworks.com/products.html</a>
  - <a href="https://imagej.net/Downloads">https://imagej.net/Downloads</a>
  - <a href="https://www.dartmouth.edu/~library/biomed/guides/research/medimages.html">https://www.dartmouth.edu/~library/biomed/guides/research/medimages.html</a>
- 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

4 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



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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. Hosa	m Salaheldin Mohamed Ibrahim					
Signature: Hosam	Date Report Completed: 17/4/1439					
Name of Field Experience Teaching S	Name of Field Experience Teaching Staff					
Program Coordinator:Dr. F	ahd Al-Hashmi					
Signature: Jahd Al-Hashmi	Date Received: 23/4/1439					

#### **Academic Accreditation & Assessment**

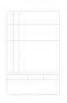


المملكة العربية السعودية الهيئة الوطنية الوطنية التقويم والاعتماد الأكاديمسي





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





Course Specifications (CS)



Program: Medical Physics



Course title: Physics of Radiotherapy



Course Coordinator: Prof. Dr. Faiz Al Goribi



Course code: 4034286-4



This form Compatible with NCAAA 2013 Edition



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

#### **Academic Accreditation & Assessment**

#### **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 Radiotherapy (Code: 4034286-4)							
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. Faiz Al Goribi							
To the old accordance to the third accordance to the condition of the cond							
5. Level/year at which this course is offered: <b>7</b> <sup>th</sup> <b>Level /4</b> <sup>th</sup> <b>Year</b>							
6. Pre-requisites for this course (if any): ): Radiation Medical Physics (2) (4033292-4)							
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							
b. blended (traditional and online)							
c. e-learning							
d. correspondence What percentage?							
f. other What percentage?							
Comments:							

# الله الانتخاصة الانتخاص الانتخاصة الانتخاص الانتخاصاء الانتخاص الانتخاص الانتخاصات الانتخاصات الانتخاصات الانتخاص ال

#### Academic Accreditation & Assessment

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#### **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 electron- 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 limitations related to treatment modalities like brachytherapy and particle therapy.



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opics to be Covered		
Topics	No of	Contac
	Weeks	hours
❖ Radiation in the Treatment of Cancer		
Kilovoltage x-ray Units		_
Linear Accelerator	2	6
Cobalt Machines		
• Simulator		
❖ Dose Distribution and Scatter analysis		
• Phantoms		
Depth Dose Distribution	2	6
Percentage Depth Dose		U
Tissue-Air Radio		
Scatter-air Ratio		
❖ Patient dose Computation Methods		
Acquisition of patient data	2	6
Treatment simulation		
Source to axis distance and isocentric techniques		
❖ A system of Dosimetric calculations		
Dose calculation parameters		
Practical applications		
(a)Accelerator Calculations	2	6
(b)Cobalt-60 Calculations		
(c) Irregular Fields		
· · · · · ·		
(D)Asymmetric Fields		
<ul> <li>Treatment Planning I:Isodose Distribution</li> <li>Isodose chart</li> </ul>	1	3
	1	3
<ul> <li>Measurement of isodose curves.</li> </ul>		
Treatment Planning: Patient data, Corrections, and set-up		
<ul> <li>parameters of isodose curves</li> </ul>		
Wedge filters	2	6
<ul> <li>Combination of radiation fields</li> </ul>		
Wedge field techniques		
<ul> <li>Tumor dose specification for external photon beams</li> </ul>		



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#### **Academic Accreditation & Assessment**

		1	
*	Students Presentations in Selected Radiotherapy Topics	1	3
<b>*</b>	Dose Fractionation in radiotherapy. Quality Assurance	1	3
*	<ul> <li>Electron beam Therapy.</li> <li>Electron interactions</li> <li>Determination of absorbed dose</li> <li>Characteristics of clinical electron beams</li> <li>Field shaping</li> </ul>	1	3
*	<ul> <li>Treatment Planning: Field Shaping, Skin dose, and Field Separation.</li> <li>Field blocks</li> <li>Field shaping</li> <li>Skin dose</li> <li>Separation of adjacent fields</li> </ul>	1	3

#### 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)



#### **Academic Accreditation & Assessment**

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Course Units/Credit Hours	4	(3+1+0) C. H	
		<b>Contact hours</b>	Private study
	Lecture	45	80
	Assignments	0	15
Student workload	Practical	42	21
	Exams & Quizzes	8	20
	Sum	95	136
	Total Sum	51	
Credits	8 ECTS C.Ps		

2. Course components (total contact hours and credits per semester):								
	Lecture	Tutorial	Laboratory	Practical	Other:	Total		
			or		(Exams,			
			Studio		Assignments and			
					Quizzes)			
Contact	45	0	0	42	7	94		
Hours								
Credit	3	0	0	1	0	4		
3. Additional private study/learning hours expected of students per week.  9.06								



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#### **Academic Accreditation & Assessment**

## 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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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	Course Teaching	Course Assessment	
#	And Course Learning Outcomes	Strategies	Methods	
1.0	Knowledge			
1.1	List the patient dose computation methods		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	<ul> <li>Lectures</li> <li>Tutorials</li> <li>Individual Assignment</li> <li>Discussions</li> </ul>		
1.3	Outline the merits and drawbacks of each equipment used in radiotherapy	S ISCUSSION S		
2.0	Cognitive Skills			
2.1	The ability Solve problems related to the patient dose calculation	Analatyical problems in	o) Aissgnments included calculation of patient dose in selscted clinical	

# العينة الوطلية التقوير العينة الوطلية التقوير والإغتصاد الإنقادية

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

# المالة الأورادية التقاوير المالة الأورادية التقاوير المالة المالة المالة المالة المالة المالة المالة المالة ال

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# **Academic Accreditation & Assessment**

ssessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11		5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
	Total Marks			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)

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", 5<sup>th</sup> 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"



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Taylor&Francis, 2007.

- 2- Faiz.M.Khan "Treatment Planning in radiation Oncology" 3<sup>rd</sup> aedition,Lippincott Williams&Wilkins, **2011**.
- 4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
  - <a href="http://www.ennovations.co.uk/p/20/interactive-radiotherapy-planning-for-students-irps-version-401">http://www.ennovations.co.uk/p/20/interactive-radiotherapy-planning-for-students-irps-version-401</a>
  - <a href="http://radonc.uams.edu/research/medical-physics-research/dicoman/">http://radonc.uams.edu/research/medical-physics-research/dicoman/</a>
  - 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



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- 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.
  - 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:	
Signature:	Date Report Completed: 20/2/1439 H
Name of Field Experience Teaching Sta	ff : <b>Dr/ Faiz Elghoriby</b>
Program Coordinator: <b>Dr.</b>	Fahd Al-Hashmi
Signature: Fahd Al-Hashmi	Date Received: 23/4/1439

# **National Commission for**



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

**Academic Accreditation & Assessment** 

### ATTACHMENT 5.

# Kingdom of Saudi Arabia

# The National Commission for Academic Accreditation & Assessment

**T6.** Course Specifications (CS)



Institution Umm Al-Qurra University

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

# **Academic Accreditation & Assessment**

# **Course Specifications**

Date 20/4/1438

College/Department Faculty of Applied Science, Physics Department				
A. Course Identification and General Info	ormation			
1. Course title Biomaterial physics and co	ode: #	4034296-3		
2. Credit hours 3				
3. Program(s) in which the course is of				
(If general elective available in many pr	_			
		dical Physics		
4. Name of faculty member responsible		irse -hadi, Ahmed		
5. Level/year at which this course is off		-naui, Animeu		
6. Pre-requisites for this course (if any)		physics		
7. Co-requisites for this course (if any)				
8. Location if not on main campus With	nin The Uni	iversity Campus in Abdiya (faculty of science)		
9. Mode of Instruction (mark all that ap	ply)			
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:				

# المينة الويالية التقوير الإعتباء الإنقادية

# Academic Accreditation & Assessment

المملكة العربية السعودية الهيئة الوطنية الوطنية والاعتماد الأكاديمي

# **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
  - 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



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two parts: (I) Biomaterial Science and Engineering, (II) and Polymers.

1 Topics to be Covered		
Торіс	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 biomaterials and their application to processing Solved	1-3	9 hrs
problems Quiz 1 Quiz 2 Chapter 2		2 hrs
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,	4-6	9 hrs
hydroxyapatite, glass, ceramics, and carbons Solved problems. Quiz 3		
First Midterm Exam	7	2 hrs



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Chapter 3 Polymers for Medical applications: Polymers	ymeric		
Polymers for Medical applications: Polyimplant, Polymers for drug delivery: typpolymer, pharmaceutical polyphysicochemical properties of polymers relationship with structure, properties, kinechanisms and applications and Manostructure Devices (DNA-templated nanowires).  Chapter 4 Hydrogels Natural vs. Synthetic Hydrogels Hydrogels as Tissue Engineering Matrices Preparation of Hydrogels.	oes of ymers. and netics, nterials	8-12	18 hrs
Second Midterm Exam		15	2 hrs
2 Course components (total contact hours per semester):			
Lecture: 15 (Credit Hrs)  Tutorial:  Practical/Fieldwork/Inte rnship:			



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- 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)

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

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). <u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. <u>Third</u>, 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	Course Teaching	Course Assessment
#	And Course Learning Outcomes	Strategies	Methods
1.0	Knowledge		



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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 (midterm 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



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2.2	To solve problems in Physics by using suitable mathematical principles	information in different references 5. Ask the student to attend lectures for practice solving problem 6- Self learning 7- Project based learning 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 (midtern 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	Computational analysis.     Data representation.     Focusing on some real results and its physical meaning.     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



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		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

Course LOs #	Program Learning Outcomes (Use Program LO Code #s provided in the Program Specifications)																
LOS #	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																	

	Assessment task (e.g. essay, test, group project, examination,	Week Due	Proportion of Total
	speech, oral presentation, etc.)		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



Tett I et 11 I e 11

# 6. Schedule of Assessment Tasks for Students During the Semester

Academic Accreui Assessment task (eg. essay, test, group **Proportion of Final** Exam Week due Assessment project, examination etc.) duration Assessment Periodical Exam (s) 4 15 min 10 % 1 2 **Mid Term Exam (Theoretic)** 8 60 min 30 % 3 **Mid Term Exam (practical)** 4 **Reports and essay** 11 20 % 5 **Final Practical Exam** 6 **Final Exam 16** 120 min 40 % **Total Marks** 100%

Course Units/Credit Hours	3	(3+0+0) C. H		
		<b>Contact hours</b>	Private study	
	Lecture	45	60	
	Assignments	0	15	
Student workload	Practical	0	0	
	Exams & Quizzes	8	20	
	Sum	53	95	
	Total Sum	148		
Credits	<b>5</b> ECTS C.Ps			

2. Course components (total contact hours and credits per semester):								
	Lecture	Tutorial	Laboratory	Practical	Other:	Total		
			or Studio		(Exams,			
					Assignments and			
					Quizzes)			
Contact	45	0	0	0	8	53		
Hours								
Credit	3	0	0	0	0	3		
2 A 11'4' 1 '								

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

6.33



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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)



### **Academic Accreditation & Assessment**

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# 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

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**Academic Accreditation & Assessment** 

- 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 1	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:					
Program Coordinator:Dr. Fahd Al-Hashmi						
Signature: <b>Fahd</b> Al-Hashmi	Date Received: 23/4/1439					

**Academic Accreditation & Assessment** 

العينة الوطلية التقوير العينة الوطلية التقوير والإغتصاد الإنقادية

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

# **Level Eight**

The Holy Qur'aan (4) 605401-2
Hospital Training 4034998-11
Islamic Culture (4) 601401-2

**Academic Accreditation & Assessment** 



الهيئة الوطنية للتقويم والاعتماد الأكاديمي

Course: The Holy Qur'aan (4) Code: 601401-2

الــرقــم: ...... الــــاريخ:.... المثفوعات : .....



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

المملكة العربية السعودية

اسم المقرر: القرآن الكريم (٤)

رقم المقرر: ١٠٤

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 :

على الطلاب في هذا الفصل استحضار وتطبيق جميع أحكام التجويد

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

# 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:المفظ:

حفظ جزء ( الذاريات ) بكامله ، مع استمرار حفظ الأجزاء الثلاثة السابقة .

Course Units/Credit Hours	Lecture: 2 credit hours			
Student workload		<b>Contact hours</b>	Private study	
	Lecture	30	60	
	Assignments	3	20	
	Practical	0	0	
	Exams & Quizzes	5	24	
	Sum	38	104	
	Total Sum	14	2	
Credits	<b>5</b> ECTS C.Ps			

2. Course components (total contact hours and credits per semester):									
	Lecture	Tutorial	Laboratory or Studio	Practical	Other: (Exams,	Total			

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والاعتماد الأكاديمي

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					Assignments and Quizzes)	
Contact Hours	30	0	0	0	7	37
Credit	2	0	0	0	0	2

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

5.2



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



T6. Course Specifications (CS)

Course Title: Training Project





Course Code: 4034998-11



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# **Academic Accreditation & Assessment**

Institution: Umm AL – Qura University

# **Course Specifications**

Date: 17/4/1439

College/Department : College of Applied Science – Department of Physics						
A. Course Identification and General Information						
1. Course title and code: Training Project (Code: 403498-11)						
2. Credit hours: 11 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: 4 <sup>rd</sup> Year / 8 <sup>th</sup> Level						
6. Pre-requisites for this course (if any): <b>Department agreement</b>						
7. Co-requisites for this course (if any): <b>NIL</b>						
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:						

# المينة الوطانية التقوير المينة الوطانية التقوير والاعتصاد الإنقادينية

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### **Academic Accreditation & Assessment**

# **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 radiation 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

# المبتد الوطنية التقوير المتحادثة التقوير والتحادثة والتحادثة والتحادثة والتحادثة والتحادثة والتحادثة والتحادثة

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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 on 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

Course Units/Credit Hours	Lecture: 11 credit hours			
		<b>Contact hours</b>	Private study	
	Lecture	0	0	
	Assignments	0	20	
Student workload	Practical	440	100	
	Exams & Quizzes	2	10	
	Sum	442	130	
	Total Sum	57	2	
Credits	19 ECTS C.Ps			

2. Course components (total contact hours and credits per semester):							
	Lecture	Tutorial	Laboratory	Practical	Other:	Total	
			or Studio		(Exams,		
					Assignments and		
					Quizzes)		
Contact	0	0	0	375	2	377	
Hours							
Credit	0	0	0	11	0	11	
3. Additional private study/learning hours expected of students per week. 11.0							

# المينة الوطنية للتمويج الإنقاديدة

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### **Academic Accreditation & Assessment**

# **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.

<u>First</u>, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).

<u>Second</u>, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

<u>Third</u>, 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.	<ol> <li>Demonstrating the basic information and principles through medical training</li> <li>Start each medical training practice by general idea and the benefit of it.</li> <li>Brain storming sessions.</li> <li>Discussions.</li> <li>Self learning</li> </ol>	<ul><li>Report</li><li>Presentation</li><li>Discussion</li></ul>
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.	<ul> <li>Using Cal-Dose program to calculate the entrance skin dose</li> <li>Group Discussion</li> <li>Encourage the student to look for the information in different references</li> </ul>	<ul> <li>Seminars</li> </ul>



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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.	<ul> <li>Cooperation with a lot of hospitals in makkah, Jeddah, Taif and Riyadh</li> </ul>	Assessment of group assignment includes component for individual contribution. Capacity for independent study assessed in individual assignments. q) 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	<ol> <li>Group seminar discussion</li> <li>Reports about different tasks</li> </ol>	l) 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,	Week Due	Proportion of Total		
	examination, speech, oral presentation, etc.)		Assessment		
1	Reports (reports/training program)	End of the	70 %		
		training project			
2	Oral presentation	End of semester	30 %		



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# 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, 2<sup>nd</sup>Eds, Wiley, 2002
- 2- Essential Nuclear Medicine Physics. R.A.Powsner&E.R.Powsner, 1<sup>st</sup>Eds, Blackwell publishing Ltd,2006.
- 3- PET Physics, Instrumentation and Scanners. M.E.Phelps, 2<sup>nd</sup> 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" 3<sup>rd</sup> aedition,Lippincott Williams&Wilkins, **2011**.
  - 3. 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/
  - <a href="http://www.ennovations.co.uk/p/20/interactive-radiotherapy-planning-for-students-irps-version-401">http://www.ennovations.co.uk/p/20/interactive-radiotherapy-planning-for-students-irps-version-401</a>
  - http://radonc.uams.edu/research/medical-physics-research/dicoman/
  - <a href="https://www.iaea.org/topics/cancer-treatment-radiotherapy">https://www.iaea.org/topics/cancer-treatment-radiotherapy</a>
  - 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



المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

### **Academic Accreditation & Assessment**

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.



المملكة العربية السعودية الهيئة الوطنية للتقويم

والاعتماد الأكاديمي

# **National Commission for**

Name of Instructor: Prof. Dr. Prof. Saud Allehyani				
Signature:	Date Report Completed: 14/4/1439 H			
Name of Field Experience Teaching Staff:	Prof. Dr. Prof. Saud Allehyani			
Program Coordinator:Dr. Fahd Al-	Hashmi			
Signature: Jahd Al-Hashmi	Date Received: 23/4/1439			



المملكة العربية السعودية الهيئة الوطنية التقويم

**Academic Accreditation & Assessment** 

**National Commission for** 

والاعتماد الأكاديمي

Course: Islamic Culture (4) Code: 601401-2



توصيف مقرر: الثقافة الاسلامية ٤٠١

أ>التعريف بالمقرر الدراسي ومعلومات عامة عنه :

اسم المقرر: الثقافة الإسلامية (٤) رمزه: ٢٠١٤٠١
عدد الساعات المعتمدة: ساعتان
البرنامج أو البرامج الذي يقدم ضمنه المقرر الدراسي:
إجباري لجميع طلاب وطالبات المرحلة الجامعية يكليات الجامعة
اسم عضو هيئة التدريس المسئول عن المقرر الدراسي: أحد أعضاه هيئة التدريس
السنة أو المستوى الأكاديمي الذي يمطى فيه المقرر الدراسي: المستوى السابع
المنطلبات السابقة لهذا المقرر(إن وجدت): الثقافة الإسلامية ١٠١٢٠٠ الثقافة الإسلامية ١٠١٠٠٠ الثقافة الإسلامية ١٠١٠٠٠ موقع تقديم انقرر إن لم يكن داخل المبنى الرئيس للمؤسسة التعليمية:
موقع تقديم انقرر إن ثم يكن داخل المبنى الرئيس للمؤسسة التعليمية:

# ب) الأهداف:

- تعريف الطالب بالمجتمع الإسلامي والمجتمعات المغايرة
- إلام الطالب بالصورة المثلى للأمة في عصر صدر الإسلام.
  - تعریف الطالب بالمجتمع الثالی للأمّة السلمة...
  - تعريف الطالب بالانحراف في النهج. والفاهيم .
- إطلاع الطالب على أحوال المجتمع السلم المعاصر و الغزو الفكري و التيارات الفكرية المنحرفة وأثرها على



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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

ات التي ينبغي تناولها:	١الموضوعا
قائمة الموضوعات	
لقرر وأهدافه. ن، المبحث الأول والثاني (ص ٧- ٢٠)	
ى، المبحث الثالث والرابع(ص ٢١ – ٥٣)	الفصل الأوا
ي، المبحث الأول (ص ٥٥- ٧٠)	الفصل الثان
ي، المبحث الثاني (ص ۷۱– ۸۸)	الفصل الثان
ىث، المبحث الأول والثاني (ص ٩٠–١٠٦)	الفصل الثال
ث، المبحث الثالث إلى السادس (ص ١٠٧ – ١٢٠)	الفصل الثال
ىث، المبحث السابع والثامن (ص ١٢١ – ١٣٥)	الفصل الثال
ل، المبحث الأول (ص ١٣٧ – ١٤٧)	الفصل الأوا
ل، المبحث الثاني (ص١٤٨–١٦٤)	القصل الأوا
ي، إلى المبحث الثاني (ص١٦٦–١٧٢)	الفصل الثان
ي، المبحث الثالث إلى الخامس	الفصل الثان

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# المينة الوطانية التقوير والإغتراب الإنقاميين

المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

# **Academic Accreditation & Assessment**

رافق اللازمة:	و . الـ
ي (قاعات المحاضرات، المختبرات،الخ):	١ –المبان
عدد من الكراسي والطاولات يكفي لجميع الطلاب في المادة، مكتبة الكلية.	قاعة دراسية و
در الحاسب الآلي: أجهزة حاسب آلي مرتبطة بالنت .  مكتبة الكترونية ،	۲-مصا
در أخرى (حددهامثل: الحاجة إلى تجهيزات مخبرية خاصة، أذكرها، أو أرفق قائمة بها):	۳–مصا
كتبة صغيرة وفق متطلبات المقرر.	وجود ه
نييم المقرر الدراسي وعمليات تطويره	ز. تق
راتيجيات الحصول على التغذية الراجعة من الطلاب بخصوص فعالية التدريس :	۱ —استر
أ- سؤال الطلاب مباشرة نهاية كل محاضرة.	
ب مقاييس الاختبارات وتقييم النتائج.	
ج — التقييم الفصلي عن طريق بيانات معتمدة توزع على الطلاب.	
راتيجيات أخرى لتقييم عملية التدريس من قبل المدرس أو القسم :	۲ –استر
أ- التقييم عن طريق المجموعات والأقسام المتناظرة.	
ب— وحدة القياس والتقييم في الجامعة.	
ج- عرض الدرس على بعض الزملاء.	
بات تطوير التدريس :	۳–عملی
—عن طريق الدورات التابعة لوكالة التطوير الجامعي.	
—عن طريق الدوريات الصادرة عن المؤسسات التعليمة والتربوية.	
-عن طريق تبادل الخبرات التعليمة والفنية بين الأساتذة.	
يات التحقق من معايير الإنجاز لدى الطالب	٤ – عما
نة من القسم بمراجعة إجابات الطلاب وتقدير الدرجات المتحصل عليها.	ا- لجن
يم الامتحان والأسئلة المعدة  للقياس والتقويم.	ب- تقيب
ليل الاختبارات ومقارنة النتائج .	ت- تحا
إجراءات التخطيط للمراجعة الدورية لمدى فعالية المقرر الدراسي والتخطيط لتطويرها:	ه-صف
تنقيح ومراجعة المقرر كل فصل دراسي.	.i
العمل على تطوير مفردات المقرر.	ب.
الاستفادة من خبرات الأستاذة في المجموعات المتناظرة.	ت.
الاستفادة من كل جديد لدى الدوريات والمجلات عن طرائق تدريس	ث.

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

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المملكة العربية السعودية الهيئة الوطنية للتقويم والاعتماد الأكاديمي

Course Units/Credit Hours	Lecture: 2 credit hours			
Student workload		<b>Contact hours</b>	Private study	
	Lecture	30	45	
	Assignments	2	15	
	Practical	0	0	
	Exams & Quizzes	5	20	
	Sum	37	80	
	Total Sum	11	7	
Credits	4 ECTS C.Ps			

2. Course components (total contact hours and credits per semester):							
	Lecture	Tutorial	Laboratory	Practical	Other:	Total	
			or Studio		(Exams, Assignments and		
					Quizzes)		
Contact Hours	30	0	0	0	7	37	
Credit	2	0	0	0	0	2	
3. Additional private study/learning hours expected of students per week.  5.33							