



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

T5. Course Report (CR)

Course title: Fundamentals of Medical Physics

Course code: 4032280-4

## Course Report

For guidance on the completion of this template refer to the NCAAAA handbooks.

Institution: <b>Umm AL – Qura University</b>	Date : <b>20/4/1440 H</b>
College/Department : <b>College of Applied Science – Department of Physics</b>	

### A Course Identification and General Information

1. Course title <b>Fundamentals of Medical Physics</b>	Code <b>4032280</b>	Sections <b>1</b>				
2. Name of course instructor <b>Dr/ Hanan Amer</b>	Location <b>Alzahr (female section)</b>					
3. Year and semester to which this report applies. <b>2<sup>rd</sup> Year / 3<sup>rd</sup> Level</b>						
4. Number of students starting the course? <input type="text" value="25"/>	Students completing the course? <input type="text" value="25"/>					
5. Course components (actual total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	<b>45</b>	-	<b>42</b>	-	-	<b>87</b>
Credit	<b>3</b>	-	<b>1</b>	-	-	<b>4</b>

### B- Course Delivery

1 Topics to be Covered		
Topics	No of Weeks	Contact hours
<b>❖ Static force</b> 1 Equilibrium and Stability 2 Equilibrium Considerations for the Human Body 3 Stability of the Human Body under the Action of an External Force 4 Skeletal Muscles 5 Levers 6 The Elbow	<b>2</b>	<b>6</b>

7 Friction Standing at an Incline		
<p>❖ <b>Elasticity and Strength of Materials</b></p> <p>1 Longitudinal Stretch and Compression 2 A Spring 3 Bone Fracture: Energy Considerations 4 Impulsive Forces 5 Fracture Due to a Fall: Impulsive Force Considerations 6 Airbags: Inflating Collision Protection Devices 7-Whiplash Injury 8 Falling from Great Height 9 Osteoarthritis and Exercise. .</p>	2	6
<p>❖ <b>The Motion of Fluids</b></p> <p>1 Bernoulli's Equation 2 Viscosity and Poiseuille's Law 3 Turbulent Flow 4 Circulation of the Blood 5 Blood Pressure 6 Control of Blood Flow 7 Energetics of Blood Flow 8 Turbulence in the Blood 9 Arteriosclerosis and Blood Flow 10 Power Produced by the Heart 11 Measurement of Blood Pressure Exercises.</p>	2	6
<p>❖ <b>Wavs and Sound</b></p> <p>1 Properties of Sound 2 Some Properties of Waves (Reflection, Refraction, Interference, Diffraction) 3 Hearing and the Ear (Performance, Frequency and Intensity and Loudness) 4 Bats and Echoes 5 Sounds Produced by Animals 6 Acoustic Traps 7 Clinical Uses of Sound 8 Ultrasonic Waves Exercises <b>1<sup>st</sup> Class Test Exam</b></p>	2	6

<p>❖ <b>Electricity</b></p> <p>1 The Nervous System 2 The Neuron 3 Electrical Potentials in the Axon 4 Action Potential 5 Axon as an Electric Cable 6 Propagation of the Action Potential 7 Synaptic Transmission .8 Action Potentials in Muscles 9 Surface Potentials 10 Electricity in Plants 11 Electricity in the Bone</p>	<b>2</b>	<b>6</b>
<p>❖ <b>Optics</b></p> <p>1 Vision. 2 Nature of Light 3 Structure of the Eye 4 Accommodation 5 Eye and the Camera 6 Lens System of the Eye 7 Reduced Eye .8 Retina 9 Resolving Power of the Eye. 10 Threshold of Vision 11 Vision and the Nervous System. 12 Defects in Vision. 13 Lens for Myopia. 14 Lens for Presbyopia and Hyperopia 15 Fiber Optics</p>	<b>2</b>	<b>6</b>
<p>❖ <b>Atomic Physics</b></p> <p>1 The Atom 2 Spectroscopy 3 Quantum 4 Electron Microscope 5 X-rays 6 X-ray Computerized Tomography 7 Lasers 7.1 Lasers application in medicine Exercises</p>	<b>1</b>	<b>3</b>
<p>❖ <b>Nuclear Physics</b></p> <p>1 The Nucleus 2 Magnetic Resonance Imaging 2.1 Nuclear Magnetic Resonance 2.2 Imaging with NMR</p>	<b>2</b>	<b>6</b>

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		
<b>Exercises and Solved problems</b> <b>2<sup>nd</sup> Class Test Exam</b>	<b>1</b>	<b>3</b>
	<b>15 weeks</b>	<b>45 hrs</b>

2. Consequences of Non Coverage of Topics  
For any topics where the topic was not taught or practically delivered, comment on how significant you believe the lack of coverage is for the course learning outcomes or for later courses in the program. Suggest possible compensating action.

Topics (if any) not Fully Covered	Effectuated Learning Outcomes	Possible Compensating Action

3. Course learning outcome assessment.

	List course learning outcomes	List methods of assessment for each LO	Summary analysis of assessment results for each LO
1.1	<ul style="list-style-type: none"> <li>Recognize facts, principle and concepts of elementary medical Physics.</li> </ul>	a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final)	100 % of students verified the learning outcomes.
1.2	<ul style="list-style-type: none"> <li>Describe concepts, Procedures of some experiments in medical physics.</li> </ul>	E) Discussions during the lectures. F) Home work.	
2.1	<ul style="list-style-type: none"> <li>Apply the laws of medical physics.</li> </ul>	a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final)	About 90 % of students verified the learning outcomes, however, other students need more mathematical background
2.2	<ul style="list-style-type: none"> <li>Solve problems in Physics by using suitable mathematical principles</li> </ul>	E) Group Assessment (discussion) F) presentation	
2.3	<ul style="list-style-type: none"> <li>Analyse and interpret quantitative results.</li> </ul>	G) Individual Assessment (solving extra problems)	
2.4	<ul style="list-style-type: none"> <li>Express the medical physical phenomena mathematically.</li> </ul>		

3.1	<ul style="list-style-type: none"> <li>Show responsibility for self-learning to be aware with recent developments in physics.</li> </ul>	a) presentation (Individual and Group Assignments) b) report (Individual and Group Assignments)	Fully understood and good feedback from students
3.2	<ul style="list-style-type: none"> <li>Work effectively in groups and exercise leadership when appropriate.</li> </ul>		
4.1	<ul style="list-style-type: none"> <li>Communicate effectively in oral and written form</li> </ul>	a) Homework b) preparing a report on some topics related to the course depending on web sites.	good feedback from students
4.2	<ul style="list-style-type: none"> <li>Collect and classify the material for a course</li> </ul>		
4.3	<ul style="list-style-type: none"> <li>Use basic medical physics terminology in English</li> </ul>		
4.4	<ul style="list-style-type: none"> <li>Acquire the skills to use the internet communicates tools</li> </ul>		

Summarize any actions you recommend for improving teaching strategies as a result of evaluations in table 3 above.

- Encourage students to improve their mathematical background through Menhag program in the department and MOOCS.
- Improving Students skills through using infographic designs and reports
- Usage of educational videos to improve teaching methods

4. Effectiveness of Planned Teaching Strategies for Intended Learning Outcomes set out in the Course Specification. (Refer to planned teaching strategies in Course Specification and description of Domains of Learning Outcomes in the National Qualifications Framework)

List Teaching Methods set out in Course Specification	Were They Effective?		Difficulties Experienced (if any) in Using the Strategy and Suggested Action to Deal with Those Difficulties.
	No	Yes	
lectures		√	
Homework		√	

Quizzes – Presentation - Report	√	<ul style="list-style-type: none"> <li>Poor academic writing skills</li> </ul> <p><b>Recommendation:</b></p> <ul style="list-style-type: none"> <li>workshop for academic writing skills.</li> <li>Use of Moocs</li> </ul>
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**Note:** In order to analyze the assessment of student achievement for each course learning outcome, student performance results can be measured and assessed using a KPI, a rubric, or some grading system that aligns student work, exam scores, or other demonstration of successful learning.

### C. Results

#### 1. Distribution of Grades

Letter Grade	Number of Students	Student Percentage	Analysis of Distribution of Grades
A	12	48%	
B	10	40%	
C	3	12%	
D	-	0	
F	-	0	
Denied Entry	-	-	
In Progress			
Incomplete		0	
Pass	25	100 %	
Fail	-	-	
Withdrawn			

2. Analyze special factors (if any) affecting the results

3. Variations from planned student assessment processes (if any) (see Course Specifications).

a. Variations (if any) from planned assessment schedule (see Course Specifications)

Variation	Reason
None	None

b. Variations (if any) from planned assessment processes in Domains of Learning (see Course Specifications)

Variation	Reason
None	None

4. Student Grade Achievement Verification (eg. cross-check of grade validity by independent evaluator).

Method(s) of Verification	Conclusion
The instructors of the course are checking together and put a unique process of evaluation	The instructors approved to vary the question model to include MCQs questions

#### D Resources and Facilities

1. Difficulties in access to resources or facilities (if any)	2. Consequences of any difficulties experienced for student learning in the course.
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#### E. Administrative Issues

1 Organizational or administrative difficulties encountered (if any)	2. Consequences of any difficulties experienced for student learning in the course.
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#### F Course Evaluation

1 Student evaluation of the course (Attach summary of survey results)

*See attached summary of student survey*

a. List the most important recommendations for improvement and strengths



<ul style="list-style-type: none"> <li>- Encourage students to attend language workshops to enhance their language skills</li> <li>- Usage of MOOCs to improve their mathematical background</li> <li>- Solve more problems related to improve their personal skills</li> </ul>
<p>b. Response of instructor or course team to this evaluation</p> <ul style="list-style-type: none"> <li>- agreement to use blended method in teaching</li> </ul>
<p>2. Other Evaluation (eg. by head of department, peer observations, accreditation review, other stakeholders)</p>
<p>a. List the most important recommendations for improvement and strengths</p>
<p>b. Response of instructor or course team to this evaluation</p>

### G Planning for Improvement

1. Progress on actions proposed for improving the course in previous course reports (if any).			
Actions recommended from the most recent course report(s)	Actions Taken	Action Results	Action Analysis
a. Taught from the reference book directly	By lecturer	Good	It improves students' personal skills
b. Increase the contact hours between student and lecturer	By lecturer	Good	It improves students' cognitive skills in solving problems
c.			
d.			

2. List what other actions have been taken to improve the course (based on previous CR, surveys, independent opinion, or course evaluation).
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3. Action Plan for Next Semester/Year
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Actions Recommended for Further Improvement	Intended Action Points (should be measurable)	Start Date	Completion Date	Person Responsible
a. Reviewing the course content regularly	Instructors meeting quarterly/semester	5/1440	8/1440	Course Coordinator
b. Increase the student activity	Preparing of extra problems Preparing list of selected topics in Medical Physics	5/1440	8/1440	Course Coordinator

Name of Course Instructor: Dr/ Hanan Amer\_

Signature *Hanan Amer*

Date Report Completed: 22/4/1440H

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_