

**ATTACHMENT 2 (e)**

**Course Specifications**

**Kingdom of Saudi Arabia**

**The National Commission for Academic Accreditation &  
Assessment**

**Course Specifications  
(CS)**

## Course Specifications

**Institution** University of Dammam

Date

## A. Course Identification and General Information

1. <b>Course title and code:</b> Nuclear physics - PHYS 404N			
2. <b>Credit hours</b> 3			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course <b>A specific team from the Physics Department</b>			
5. Level/year at which this course is offered Level 7 / fourth year			
6. Pre-requisites for this course (if any) Quantum mechanics (1)			
7. Co-requisites for this course (if any) NA			
8. Location if not on main campus NA			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	<input type="checkbox"/>	Yes	What percentage? 80%
b. blended (traditional and online)	<input type="checkbox"/>	Yes	What percentage?
10% c. e-learning	<input type="checkbox"/>	No	What percentage?
0% d. correspondence	<input type="checkbox"/>	No	What percentage?
f. other	<input type="checkbox"/>	Yes	What percentage? <input type="text" value="0%"/>
	<input type="checkbox"/>		<input type="text" value="10%"/>
Comments:	<input type="checkbox"/>		<input type="text"/>

## B Objectives

1. What is the main purpose for this course?

The objectives of this Physics Laboratory Course are to:

- The student learns the properties of the nucleus.
- The student learns the nuclear forces and energy.
- The student learns the nuclear structure and how it is used to interpret the nuclear reactions and radioactivity.
- Study the reactors and accelerators.

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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)

- Preparing lectures and explained the process using tools such as clarification: blackboard, electronic display devices.
- The use of modern electronic references such as books and Interactive sections
- Project.
- Team work.

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

Course Description:

1. Topics to be Covered			
	List of Topics	No. of Weeks	Contact
1a	The basic properties of the nucleus.	2	3×2
2a	The nuclear interaction and conservation laws.	2	3×2
3a	Nuclear structure.	1	3
4a	Natural radioactivity.	2	3×2
5a	Nuclear reactors.	2	3×2

6a	Accelerator.	1	3
7a	Radiation doses.	1	3
8a	Biological effects of radiation	1	3
9a	Elementary particles	1	3

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	39	-	-	-	-	39
Credit	39	-	-	-	-	39

3. Additional private study/learning hours expected for 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	Course Teaching	Course Assessment
1.0	<b>Knowledge</b>		
1.1	The student knows the basic properties of nucleus.	<ul style="list-style-type: none"> <li>• The student should read the topic, as many times as possible, before</li> </ul>	<ul style="list-style-type: none"> <li>• Tests.</li> <li>• Quiz.</li> <li>• continuous assessment and reports</li> </ul>

		<ul style="list-style-type: none"> <li>• Explain.</li> </ul>	
1.2	Knowledge the nuclear forces and energy.	<ul style="list-style-type: none"> <li>• Explain</li> <li>• Panel discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Reports</li> <li>• tests</li> </ul>
1.3	Use the nuclear structure to interpret the nuclear reactions and radioactivity.	<ul style="list-style-type: none"> <li>• Explain the result in panel discussion.</li> <li>• Brain storm.</li> <li>• Submit report.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate reports.</li> <li>• Tests.</li> </ul>
1.4	Learn how the nuclear reactors work.	<ul style="list-style-type: none"> <li>• Explain</li> <li>• Panel discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Reports</li> <li>• tests</li> </ul>
1.5	Learn the research methods	Use the internet for	Evaluate short paper
<b>2.0</b>	<b>Cognitive Skills</b>		
2.1	Gain scientific research skill.	<ul style="list-style-type: none"> <li>• Use the internet for searching.</li> <li>• Online books</li> </ul>	Tests, reports and evaluate short paper.
2.2	Able to understand the nuclear structure and the basic properties of nucleus.	Present report of results, PowerPoint and the discussions.	Tests, evaluate the report and the presentation.
2.3	Able to understand the nuclear interactions.	<ul style="list-style-type: none"> <li>• Explain in panel discussion.</li> <li>• Brain storm.</li> </ul>	Tests, evaluate the report.
2.4	The student able to understand how nuclear reactors work.	<ul style="list-style-type: none"> <li>• Explain</li> <li>• Panel discussion</li> </ul>	Tests, reports and evaluate short paper.
<b>3.0</b>	<b>Interpersonal Skills &amp; Responsibility</b>		
3.1	Work within and contribute to a team, apply management skills such as coordination, project design and evaluation and decision processes.	<ul style="list-style-type: none"> <li>• Dividing students into teamwork and participate in panel discussions.</li> <li>• Allow freedom</li> </ul>	<ul style="list-style-type: none"> <li>• Tests.</li> <li>• Evaluate the duties of students.</li> </ul>
3.2	Develop the leadership for the students.	Choose the leader of the group.	Evaluate the work of the leader in the management team and the achievements of the team.
3.3	Communication between the students to solve problems and achievement the duties.	e-mail and meeting in office	Evaluate the duties of students.
3.4	Relationship emphasis a successful with other students	Work in group	Evaluate the duties of
<b>4.0</b>	<b>Communication, Information Technology, Numerical</b>		
4.1	Use power point in presentation.	<ul style="list-style-type: none"> <li>• Team work.</li> <li>• Discussions.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate the presentatio</li> </ul>
4.2	Develop the skill to use the Internet in search.	<ul style="list-style-type: none"> <li>• Discussions and dialogue.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate short paper.</li> </ul>
<b>5.0</b>	<b>Psychomotor</b>		
5.1	NA		
5.2			

5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)																
Course LOs #	<b>Program Learning Outcomes</b> (Use Program LO Code #s provided in the Program)															
	Knowledge					Cognitive Skills				Interpersonal Skills & Responsibility				Communication, Information		Psychomotor
	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	5.1
<b>1a</b>																
<b>2a</b>																
<b>3a</b>																
<b>4a</b>																
<b>5a</b>																
<b>6a</b>																
<b>7a</b>																
<b>8a</b>																
<b>9a</b>																

6. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (e.g. essay, test, group project, examination.)	Week Due	Proportion of Total Assessment (100)
1	Oral Presentation (group project)	1	5
2	Report	1	5
3	Test	2	30
4	Final examination	1	50
5	The		100
6			

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)

Three contact hours/week.

Four office hours/week.

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## E Learning Resources

### 1. List Required Textbooks

- 1- An introduction to Nuclear Physics; W. N. Cottingham, Cambridge Univ.
- 2- Introductory Nuclear Physics: David Halliday, 2<sup>nd</sup> Edition; John Wiley & Sons, Inc. New York. London.
- 3- Introductory Nuclear Physics by: H.S.Krane.

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

NA

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

Video and power  
point. NA

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

Interactive sections from the website

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

software. Power point

## 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.)

Laboratories

Projector

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Black board

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

Computer or Laptop

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

NA

## G Course Evaluation and Improvement Processes

### 1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Course Evaluation Questionnaire.
- Tests.
- Discussions.

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

NA

### 3 Processes for Improvement of Teaching

- Using the self-learning technique.
- Add new topics to the course.

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)

NA





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

- Make the necessary adjustments based on feedback.
- Prepare file course for review.

