ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Course Specifications
(CS)

Atomic Physics ,PHYS402

Course Specifications

Institution: University of Dammam Date: 17 /2/2014

College/Department : College of Science / Physics

A. Course Identification and General Information

1. Course title and code: Atomic Physics ,PHYS402

2. Credit hours: 3 hours

3. Program(s) in which the course is offered.
(If general elective available in many programs indicate this rather than list programs)
Physics

4. Name of faculty member responsible for the course
A specific team from the Physics Department

5. Level/year at which this course is offered :Eighth Level

6. Pre-requisites for this course (if any) : PHYS 310

7. Co-requisites for this course (if any) : N/A

8. Location if not on main campus : N/A

9. Mode of Instruction (mark all that apply)

a. traditional classroom	-	What percentage?	40%
b. blended (traditional and online)		What percentage?	
c. e-learning	-	What percentage	60%
d. correspondence		What percentage?	
f. other		What	

percentage? Comments:

B Objectives

1. What is the main purpose for this course?

   Detailed study of the atomic spectra: history development, types and Applications

B - Objectives

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)

- Using Internet in the classroom
- Linking the lecture content with new published research.

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

Course Description:

To recognize the following :

B. Objectives

- The characteristics of atomic spectra and molecular spectra.
- Applications of quantum theory
- Types and applications of atomic spectra

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact hours
Introduction to spectrum .	1	3
Atomic structure-**The** Hydrogen atom- models of the Atom – Quantum numbers	2	6
The exclusion principle -Electronic configuration – Spectrum series	1	3
Franck Hertz Experiment – Alkalin metal spectra .	1	3
Atomic spectra- the electromagnetic spectrum regions	1	3
Study of materials composition using the spectrum- Types of spectra	1	3
Molecular spectra - The influence of the external fields on the spectrum	2	6
The nature and characteristics of laser	1	3

B Objectives

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	30 hours	Atomic Physics	N/A	N/A	N/A	
Credit						

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

N/A B Objectives

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

By the end of The course the student should be able to do the following:

- Recognizes the electronic structure and properties of atomic spectra and molecular spectra.
- Draws energy levels of atomic spectra.
- Explains applications of quantum theory.
- Describes types and applications of atomic spectra.
- Recognizes the effect of the magnetic field on atomic spectra.

B- Objectives

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	**Knowledge**		
1.1	Recognizes the electronic structure of atomic spectra for different atoms	Lecture.	Periodic tests
1.2	Recognizes the application of quantum theory.	Constructive discussion during the	Assignments
1.3	Distinguish between different atomic models.		Homeworks
1.4	Identify the ways to use atomic spectra in the study of material composition.		
1.5	Identify the effect of the magnetic field on the atomic spectra		
2.0	**Cognitive Skills**		

B Objectives

2.1	To draw a Plan of the energy levels of different atoms and spectral lines emitted from them.	Lecture	Periodic tests
2.2	To compare between different quantum numbers	exercises	Assignments.
2.3	To link between the various models of atoms and its characteristics	Constructive discussion	Homework.
2.4	To apply the atomic spectra when studding material composition.		reports
2.5	Formulates the effect of a magnetic field on atomic spectra		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Being able to deal with others properly	Cooperative Education	Observation
3.2	To respect the views of other student	Working in teamwork's.	
3.3	To accept the criticism		
4.0	**Communication, Information Technology, Numerical**		
4.1	using equations in solving exercises and assignments	Role plays collaborative	Observation
4.2	using E-mails to receive important comments and explanations	Dealing Cooperative	interview
4.3	- Using database to access required scientific material.	Navigating the internet to search recent applications of	
4.4		working in research	
5.0	**Psychomotor**		
5.1			
5.2			

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

Course LOs #	**Program Learning Outcomes (Use Program LO Code #s provided in the Program**								
	1.1	**1.2**		**2.1**		**3.2**		**4.1**	
1.1									
2.1									

6. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination,	Week Due	Proportion of Total Assessmen
1	Oral questions during the lecture and assignments	Every Week	10 %
2	first mid term test	seventh	20 %
3	second mid term test	eleventh	20 %

4	B -Objectives Final examination	Fifteenth	50 %

D. Student Academic Counseling and Support

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

4 hours office per week

B Objectives

E Learning Resources

1. List Required Textbooks Physics for Scientists and engineers (Modern Physics) :R.A.Serway ,G.Gewett .
2. List Essential References Materials (Journals, Reports, etc. -Atomic and nuclear physics: Henery Semat; Champman and Hall,LTD, London. - Atomic Spectra: T.P.Softeley, Oxford Univ. - Atomic and Molecular Spectroscopy :S.Svanberg; Springer Verlag.
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) - Physics for Scientists and engineers (Modern Physics) :R.A.Serway ,G.Gewett . -Atomic and nuclear physics: Henery Semat; Champman and Hall,LTD, London. - Atomic Spectra: T.P.Softeley, Oxford Univ. - Atomic and Molecular Spectroscopy :S.Svanberg; Springer Verlag.
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc. N/A
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.) - The size of the classroom should be appropriate to the number of students. -The practicum for course is studied in past course (Laboratory Physics 2)
2. Computing resources (AV, data show, Smart Board, software, etc.) Provide a sufficient number of computers.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) N/A

Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching
Oral and written tests ,and home works and research discussions.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department -Evaluation depends on questionnaire provided to students and encouraging them to fill it. - Continuing debates.
3 Processes for Improvement of Teaching Permanent and continuous link between the courses contents in a way that helps the student to create new ideas spontaneously based on the cited information .
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) Auditing a corrected sample of exams by specialized professors in the department.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. - The effectiveness of the curriculum through direct questions with the students, quizzes and planning for development. - Reviewing students perspective through a questionnaire distributed at the end of the semester - Reviewing the course description for the same course taught in other universities in the Kingdom.