

T6. Course Specification (CS)

Institution: Najran University	Date: Second semester 1/5/2018
College/Department: Science & Arts Faculty / Physics	

A. Course Identification and General Information:

1. Course title and code : Concepts of modern physics (345 phys -2)			
2. Credit hours :2			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Physics Program.			
4. Name of faculty member responsible for the course : Dr /Heba Mohamed & Dr/Aymen Abdallah			
5. Level/year at which this course is offered :5 th level / third year			
6. Pre-requisites for this course (if any) : None			
7. Co-requisites for this course (if any) :None			
8. Location if not on main campus: Males and females division in New campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
b. Blended (traditional and online)	<input checked="" type="checkbox"/>	What percentage?	100
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
d. Correspondence	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
f. Other	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
Comments :NO Comments			

B. Objectives

1. What is the main purpose for this course? Provide students with concepts of modern physics and expanding students' perceptions in the finer branches of physics and dealing with it such as black body, atomic structure, X-ray and Radioactivity.
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) <ul style="list-style-type: none"> Update the contents of the course on the basis of recent developments.

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

Course Description :

This course provides students with concepts of modern physics and expanding students' perceptions in the finer branches of physics and dealing with it such as black body, atomic structure, X-ray and Radioactivity

1. Topics to be Covered :		
List of Topics	No. of Weeks	Contact Hours
Electromagnetic wave as a particle: black body radiation (Rayleigh-Jeans law- Wien's displacement law- Planck's quantum theory of black body radiation). Interaction of radiation with matter (Photoelectric effect, Compton effect- pair production). Particle as a wave- De-Broglie waves (De Broglie hypothesis)- electronic microscope- diffraction of electrons- Heisenberg's uncertainty principle.	6	12
Atomic models: Thomson model- Rutherford model- Bhor Hydrogen model and atomic energy levels- atomic spectrum of Hydrogen - Effect of nucleus movement on energy levels and atomic spectra.	4	8
X-ray: properties- production- spectrum (continuous, line)- Moseley's law. X-ray diffraction and Bragg's law.	3	6
Introduction to radioactivity: nature radioactivity- radioactive decay law- Alfa decay - Beta decay - Gamma decay - cosmic rays.	2	4

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

3-Additional private study/learning hours expected for students per week 2h/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.

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	Student should be able to: State the basic principles and theories contained in chapters related to: <ul style="list-style-type: none"> - Black body radiation , wave as a particle and Particle as a wave - Atomic models - interaction of radiation with 	Lecture dialogue and discussion	midterm and final exams

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
	matter - X-ray - radioactivity		
2.0	Cognitive Skills		
2.1	Student should be able to: Solve problems on laws and equations contained in chapters related to: - Black body radiation, wave as a particle and Particle as a wave - Atomic models - interaction of radiation with matter - X-ray - radioactivity	Lecture dialogue and discussion	midterm and final exams + assignment
2.2	Student should be able to: Interpret theories and facts contained in chapters related to: - Black body radiation, wave as a particle and Particle as a wave - Atomic models - interaction of radiation with matter - X-ray - radioactivity :	Lecture dialogue and discussion	midterm and final exams + assignment
3.0	Interpersonal Skills & Responsibility		
3.1	Student should be able to participate in class discussion.	Active learning Cooperative learning	Observation card
4.0	Communication, Information Technology, Numerical		
4.1	Student should be able to Demonstrate effective Communicate with the others.	Active learning Cooperative learningsion	Observation card
4.2	Student should be able to Research by using Information Technology and analyze numerical values to get information behind them	Active learning Cooperative learning	Observation card
5.0	Psychomotor		
5.1	Not applicable		

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (e.g. essay, test, Quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
	First semester exam	5-6	20%
	Second semester exam	11-12	20%
	assignment	During semester	10
	Final exam	16-18	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)

- Two office hours per a week
- The instructor will generally be available after lectures times during official working hours for extra help.
- The instructor will generally be available at Blackboard forum for extra help.

E. Learning Resources

1. List Required Textbooks:

- Arabic reference (مفاهيم في الفيزياء الحديثة، فخري اسماعيل حسن، دار المريخ للنشر/الرياض- الطبعة الأولى 2015)
- Beiser, Concepts of modern physics, , 6 th Edition, McGraw-Hill publisher, 2003

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

Wiley , Modern physics by Kenneth Krane, 3 rd Edition, published by (2012)

Weidner & Sells, Elementary modern physics , , Allyn and Bacon publisher Boston.1986

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

<http://sciencebooksonline.info/physics.html>

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

Not exist

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 can accommodate up to 50 students equipped with all IT equipments - connected to the Internet.

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

- Number of computers connected to the Internet.

<ul style="list-style-type: none"> • Data show
<ul style="list-style-type: none"> • Not exist

G. Course Evaluation and Improvement Processes **تقييم المقرر الدراسي وعمليات تحسينه**

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching <ul style="list-style-type: none"> • University online questionnaire evaluation of course by students.
2. Other Strategies for Evaluation of Teaching by the Instructor or by the department. <ul style="list-style-type: none"> • Course report at the end of semester. • Evaluate the course portfolio
3. Processes for Improvement of Teaching: <ul style="list-style-type: none"> • Use of modern strategies in teaching. • Improve teaching through feedback from student's questionnaire (on the university Web site) • Attending workshops and training courses for the development of teaching skills and strategies used in modern education • Keeping up to date with refereed articles and books related to the topics of 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) <ul style="list-style-type: none"> • Use the system of measure learning outcomes to verify students' familiarity with targeted learning outcomes(KPI) • Annual course report.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement : <ul style="list-style-type: none"> • Study and compare the results of the students in course • Guided by the students feedback about the effectiveness of the course material through student's questionnaires • Continues development of teaching methods and student participation • Review and update the course to fulfill the needs of the labor market • Study of the proposals submitted by professors have experience in teaching the course • Using feedback from rotating Evaluation of course and performance of a faculty member in Development plans • Update learning resources for the course regularly using the Internet • Consult with other faculty member who is teaching the same course • Update the content of the course in line with recent developments in the field

Name of instructor :

Dr / **Dr /Heba Mohamed & Dr/Aymen Abdallah**

Signature : _____ Date Report Completed: 1/5/2018

Name of field experience teaching staff: _____

Program coordinator _____

Signature: _____ Date received: 1/5/2018