المركز الوطني للتقويم والاعتماد الاكاديمي
National Center for Academic Accreditation and Evaluation

ATTACHMENT 5.

T6. COURSE SPECIFICATIONS (CS)

هيئة تقويم التعليم
Education Evaluation Commission

Course Specifications

Institution: **University of Tabuk**	Date: 11.08.1440
College/Department : : **Faculty of Science, Department of Physics**	

A. Course Identification and General Information

1. Course title and code: Modern physics (1) Code # Phys 241
2. Credit hours: 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: Jalal Hasan Bakeer
5. Level/year at which this course is offered: Level 6- 1439-1440
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: main campus
9. Mode of Instruction (mark all that apply):

a. traditional classroom	x	What percentage?	100
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other		What percentage?	

Comments:

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: The special theory of relativity, Galilean and Lorentz transformation. Relativistic dynamics, photoelectric effect, Black body radiation, the Compton effect, Photon, De Boglie's hypothesis, Uncertainty principles, wave packet basics, properties of atoms, Thomson model, the Rutherford model, Bohr's model the Frank-Hertz Experiment, the correspond principle in special relativity and in quantum mechanics.

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
Introduction to class	1	3
Einstein` First Postulate -Einstein` second Postulate	2	3
Relativity of time intervals Relativity of length.	3	3
The Lorentz Transformations	4	3
Relativistic Momentum Relativistic Work and Energy	5	3
1st midterm exam	6	3
The Photoelectric effect	7	3
Atomic Line Spectra and Energy Levels	8	3
The Nuclear Atom	9	3
The Bohr Model	10	3
The X-Ray Production and Scattering Compton Scattering	11	3
2sd midterm exam	12	3

De Broglie Waves	13	3
Electron Diffraction Probability and Uncertainty	14	3
The Electron Microscope	15	3

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

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planed	45					45
	Actual	45					45
Credit	Planed	3					3
	Actual	3					3

3. Additional private study/learning hours expected for students per week: 6 hr

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	The course is designed to equip students with the knowledge advanced mathematical and computational tools.	Lectures • In-class discussions • Exercises	Homework problems and assignment tasks
1.2			
2.0	**Cognitive Skills**		
2.1	The course is designed to develop the mathematical skills that are useful in other theoretical subjects, such as, quantum mechanics and nuclear physics, particle physics, solid state physics and computational physics etc.	• Lectures. • Problem solving • Case study	Weekly Quizzes and exams.
2.2			
3.0	**Interpersonal Skills & Responsibility**		
3.1	Ability to develop in solving problems in groups during tutorial.	Search through the internet and the library.	Weekly Quizzes and exams.

3.2	Work effectively in groups and exercise leadership when appropriate. **4.0 Communication, Information Technology, Nu**	Develop their interest in Science through : (lab work, visits to scientific and research institutes).	• Evaluate the efforts of each student in preparing the report. • Evaluate the scientific reports.
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate effectively in oral and written form.	• Incorporating the use and utilization of computer, software, network and multimedia through courses	Evaluating the scientific reports.
4.2	Collect and classify the material for the course	• preparing a report on some topics related to the course depending on web sites	Evaluating activities and homework
5.0	**Psychomotor**		
5.1			
5.2			

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	quizzes	3	10%
2	Examination(1)	6	25%
3	Examination(2)	12	25%
4	Final exam	14	40%
5			
6			
7			

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)

There will be at least six essential office hours every week in which students will be allowed to discuss their individual problems regarding lessons

E Learning Resources

1. List Required Textbooks
Modern Physics, by K.S. Krane, 2nd edition (1995), John Wiley & Sons, Inc

2. List Essential References Materials (Journals, Reports, etc.) University physics with modern physics 11the Edition Young& Freedman Concepts of modern physics By A.Beiser sixth Edition 2002 Modern physics for scientists and engineers By . J. Taylor 2003
3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
4. 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.) Classrooms
2. Technology resources (AV, data show, Smart Board, software, etc.) 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

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching Standard course evaluation questionnaire
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department Questionnaire Statistical regular review and analysis
3. Processes for Improvement of Teaching **Evaluators: Academic Affairs Staff** **Evaluation Method: 1) Completion course evaluation questionnaire, 2) Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.**

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)

Evaluators: Instructor
Evaluation Method: Check marking of a sample of examination papers.

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

1. **Evaluation Method:** 1) Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision, 2) A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment, 3) Continuous process for reviewing feedback from student on the quality of the course and planning for improvement

Name of Course Instructor: Jalal Hasan Bakeer

Signature: _____ Date Specification Completed: 11-8-1440

Program Coordinator: Dr. Fahad Alharbi

Signature: Dr. Fahad Alharbi Date Received: 7/7/2019