|  |  |  |
| --- | --- | --- |
|  | **Mutah University**  **Detailed Syllabus Form** | Description: C:\Users\lamasat.lamasat-PC\Pictures\Picture1.png |

**First :** Course Information**:**

|  |  |
| --- | --- |
| * Course Number: 0302252 | * Course Title: Modern Physics (1) |
| * Credit Hours: 2 | * College: Science |
| * Pre-requisite 0302102 | * Department: Physics |
| * Instructor:Prof Dr. Mohammad Al-Share' | * Semester & Academic Year: first 2016/2017 |
| * the time of the lecture: Sunday and Tuesday 9-10 and 10-11 | * Office Hours:Monday 12-1, Tuesday 11-12 and Wednesday 11-12 |

**Second :** General Course Description

**...............................................................................................................................................** this course will cover some of the modern concepts and theories of the physics of atoms and nuclei, such as, an introduction to the special theory of relativity, particle properties of waves, wave properties of particles, atomic structure, and quantum mechanics to the student. Which make him understand many of the new phenomena in the microscopic scale.

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**Third :** Course Objectives

**St**udents should Know some of the modern concepts and theories of the physics of atoms and nuclei, such as, an introduction to the special theory of relativity, particle properties of waves, wave properties of particles, atomic structure, and quantum mechanics to the student. Which make him understand many of the new phenomena in the microscopic scale.

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**Fourth:** Expected Learning Outcomes

* **S**tudents should have acquire the techniques of solving physics problems
* **.................................................................................................................................... S**tudents should have acquire the skills and techniques to connect the physical concepts together.
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* **....................................................................................................................................**

**Fifth :** Course Plan Distribution & Learning Resources

|  |  |  |
| --- | --- | --- |
| **Learning Resources** | **Topics to be Covered** | **Week**  **No.** |
| Concepts of Modern Physics/ Arthur Beiser | Postulates of special theory of relativity. |  |
| Concepts of Modern Physics/ Arthur Beiser | Postulates of special theory of relativity. |  |
| Concepts of Modern Physics/ Arthur Beiser | Postulates of special theory of relativity. |  |
| Concepts of Modern Physics/ Arthur Beiser | Postulates of special theory of relativity. |  |
| Concepts of Modern Physics/ Arthur Beiser | Particle properties of waves. |  |
| Concepts of Modern Physics/ Arthur Beiser | Particle properties of waves. |  |
|  | Wave properties of particle ( De Broglie waves). |  |
|  | Wave properties of particle ( De Broglie waves). |  |
|  | Atomic Structure |  |
|  | Atomic Structure |  |
|  | Atomic Structure |  |
|  | Quantum mechanics |  |
|  | Quantum mechanics |  |
|  | Quantum mechanics |  |
|  | Quantum mechanics |  |
|  | Final Exam |  |

**Sixth :** Teaching Strategies and Methods

|  |  |
| --- | --- |
| **Teaching Strategies and Methods** | No |
| The concepts and laws will be presented to the students | **1** |
| Some examples will be solved and discussed with the students | **2** |
| Some experiments will be performed by the students to demonstrate the laws | **3** |
|  | **4** |
|  | **5** |

**Seventh :** Methods of Assessment

|  |  |  |  |
| --- | --- | --- | --- |
| **Proportion of Final Evaluation** | **Evaluation Methods of** | **Week & Date** | **No.** |
| **25%** | First Exam | **25/10/2016** | **1.** |
| **25%** | Second Exam | 24/11/2016 | **2.** |
| **50%** | Final Exam |  | **3.** |
|  |  |  | **4.** |
|  |  |  | **5** |
|  |  |  | **6** |
| **(100%)** |  | **Total** | |

**Eighth :** Required Textbooks

**- Primary Textbook:**

Text Book

* **................................................................................................................................** Concepts of Modern Physics/ Arthur Beiser**....**

**-** **Secondary References**

1. Modern Physics From A to Z / James Rohlf
2. Modern Physics / K. Krane
3. Essential of Modern Physics / Acosta, Cowan and Graham

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* **....................................................................................................................................**

**Ninth :** General Instructions

|  |  |
| --- | --- |
| **Additional Notes, Office hours, Incomplete Exams, Reports, Papers, …etc** | **No** |
| Home works  **Chap 1** : 7, 5, 9, 19, 12, 15, 18, 20, 26, 32, 33, 35, 37, 40. **Chap 2** : 7, 8, 9, 10, 13, 14, 15, 17, 21, 23, 25, 28, 29, 33, 34, 39. **Chap 3** : 2, 4, 9, 10, 17, 20, 21, 25, 27, 32, 33, 34, 38, 39. **Chap 4** : 3, 4, 5, 11, 9, 8, 16, 20, 22, 26, 27, 29, 31. **Chap 5**: 1, 2, 15, 16, 31 | **1** |
|  | **2** |
|  | **3** |
|  | **4** |
|  | **5** |