# Course Specification
## (Bachelor)

| | |
|---|---|
| **Course Title:** | General Physics 1 |
| **Course Code:** | PHYS 0101 |
| **Program:** | BSc in Physics and ,<br>BSc in Physics of Renewable Energy and Environment |
| **Department:** | Physics |
| **College:** | Science |
| **Institution:** | Majmaah University |
| **Version:** | 2024 |
| **Last Revision Date:** | Dec/2024 |

## Table of Contents

## A. General information about the course:

### 1. Course Identification

| 1. Credit hours: 3(3,0,0) | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **2. Course type** | | | | | |
| **A.** | ☐University | ☒ College | ☐Department | ☐Track | ☐Others |
| **B.** | ☒ Required | | ☐Elective | | |
| **3. Level/year at which this course is offered: ( 1st level/1st year)** | | | | | |
| **4. Course General Description:** | | | | | |
| An introductory course in classical physics covering fundamental concepts of mechanics. The course includes the study of motion, forces, energy, momentum, and rotational motion, with emphasis on practical applications and analytical skills. | | | | | |
| **5. Pre-requirements for this course** (if any)**:** | | | | | |
| None | | | | | |
| **6. Co-requisites for this course** (if any)**:** | | | | | |
| None | | | | | |
| **7. Course Main Objective(s):** | | | | | |
| 1. Understanding fundamental concepts of classical mechanics and their applications<br>2. Developing quantitative and qualitative analysis abilities for physical phenomena<br>3. Acquiring scientific experimentation and data analysis skills<br>4. Using mathematical tools to model physical phenomena | | | | | |

### 2. Teaching mode (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 1 | Traditional classroom | 45 | 100 % |
| 2 | E-learning | | |
| 3 | Hybrid<br>• Traditional classroom<br>• E-learning | | |

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 4 | Distance learning | | |

### 3. Contact Hours (based on the academic semester)

| No | Activity | Contact Hours |
|---|---|---|
| 1. | **Lectures** | 45 |
| 2. | **Laboratory/Studio** | |
| 3. | **Field** | |
| 4. | **Tutorial** | |
| 5. | **Others (specify)** | |
| **Total** | | 45 |

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| **1.0** | **Knowledge and understanding** | | | |
| 1.1 | Explanation of the basic concepts in classical mechanics and their relationships | K1, K2 | Lecture, Lab | Exam, Homework Quizzes |
| 1.2 | Description of basic physics laws governing movement and forces | K1, K2 | Lecture, Lab | Exam, Homework Quizzes |
| 1.3 | Definition of energy concepts, mobility and conservation laws | K1, K2 | Lecture, Lab | Exam, Homework Quizzes |
| **2.0** | **Skills** | | | |
| 2.1 | Analysis of physical issues and development of | S1, S3 | Lecture, Lab | Exam, Homework Quizzes |

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| | strategies for solving them | | | |
| 2.2 | Application of physical principles in the resolution of quantitative issues | S1 | Lecture, Lab | Exam, Homework Quizzes |
| 2.3 | Linking physical theories to natural phenomena | S1 | Lecture, Lab | Exam, Homework Quizzes |
| **3.0** | **Values, autonomy, and responsibility** | | | |
| 3.1 | Ability to continuously explore best practices and policies as well as their application at the highest level of quality. | V1, V2 | group discussion | Presentation |
| 3.2 | Preservation of the integrity of experimental results within critical spirit | V1, V2 | Lecture, group discussion | Presentation |
| ... | | | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1. | Fundamentals of Measurement and Vectors | 6 |
| 2. | Motion in One and Two Dimensions | 9 |
| 3. | Forces and Motions | 9 |
| 4. | Energy and Work | 9 |
| 5. | Momentum and collisions | 6 |
| 6. | Rotational Motion and Equilibrium | 6 |
| **Total** | | **45** |

## D. Students Assessment Activities

| No | Assessment Activities * | Assessment timing (in week no) | Percentage of Total Assessment Score |
|---|---|---|---|
| 1. | Midterm exam 1 | 6th | 15 % |
| 2. | Homework/Presentation | -- | 15 % |
| 3. | Midterm exam 2 | 11th | 15 % |
| 4. | Quizzes | 4th, 8th, 12th | 15 % |
| 5. | Final exam | 16th | 40 % |

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

## E. Learning Resources and Facilities

### 1. References and Learning Resources

| | |
|---|---|
| **Essential References** | • Physics for Scientists and Engineers, Raymond A. Serway and John W. Jewett, 10th Edition, Cengage Learning (2023)<br>• University Physics with Modern Physics, Young & Freedman, 16th Edition, Pearson (2024)<br>• Fundamentals of Physics, Halliday, Resnick, and Walker, 12th Edition, Wiley (2023)<br>• Physics for Scientists and Engineers: A Strategic Approach, Randall D. Knight, 5th Edition, Pearson (2024) |
| **Supportive References** | • College Physics: A Strategic Approach, Knight, Jones & Field, 5th Edition, Pearson (2024)<br>• Essential University Physics, Richard Wolfson, 4th Edition, Pearson (2023)<br>• Physics, Cutnell and Johnson, 12th Edition, Wiley (2024) |
| **Electronic Materials** | • MIT OpenCourseWare - Classical Mechanics<br>• Khan Academy - Physics Library<br>• PhET Interactive Simulations - University of Colorado Boulder |
| **Other Learning Materials** | Excel software for drawing graphs.<br>MS Office for writing reports and presentations. |

### 2. Required Facilities and equipment

| Items | Resources |
|---|---|
| **facilities**<br>(Classrooms, laboratories, exhibition rooms, simulation rooms, etc.) | Lecture room with at least 25 seats.<br>Auditorium of a capacity of not less than 100 seats for large lecture format classes. |

| Items | Resources |
|---|---|
| **Technology equipment** (projector, smart board, software) | A smart board to write on and computer. |
| **Other equipment** (depending on the nature of the specialty) | Library, Seminar Room, and Wi-Fi internet connections. |

## F. Assessment of Course Quality

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|---|
| Effectiveness of teaching | Internal Reviewer Committee | Direct |
| Effectiveness of Students' assessment | Students | indirect |
| Quality of learning resources | Qiyas center, Stockholder and others | Direct |
| The extent to which CLOs have been achieved | Peer Reviewer | Direct |
| Other | | |

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

## G. Specification Approval

| | |
|---|---|
| **COUNCIL /COMMITTEE** | **PHYSICS DEPARTMENT COUNCIL** |
| **REFERENCE NO.** | **16** |
| **DATE** | **30/12/2024** |