



# Course Specification

## (Bachelor)

Course Title: **General Physics 2**

Course Code: **PHYS 0202**

Program: **BSc in Physics and BSc in Physics of Renewable Energy and Environment**

Department: **Department of Physics**

College: **College of Science**

Institution: **Majmaah University**

Version: **I**

Last Revision Date: **30/12/2024** *Pick Revision Date.*



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## A. General information about the course:

### 1. Course Identification

1. Credit hours: 4 (3,2,0)

#### 2. Course type

A.  University  College  Department  Track  Others  
B.  Required  Elective

3. Level/year at which this course is offered: ( Third Level/ Second Year)

#### 4. Course General Description:

This course is an introductory course for the fundamental principles of physics in states of matters, heat, and optics. The student will be studying the main concepts of states of matters, heats, and optics.

5. Pre-requirements for this course (if any):

PHYS 0101 General Physics 1

6. Co-requisites for this course (if any):

None

#### 7. Course Main Objective(s):

By the end of this course, the student will be able to:

1. Develop a clear understanding of the basic concepts in states of matters, heats, and optics.
2. Explain the physical principles underlying fundamentals, heats, and optics.

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

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>		
4	Distance learning		





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

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	30
3.	Field	
4.	Tutorial	
5.	Others (specify)	
<b>Total</b>		<b>60</b>

### 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
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Knowledge of physical concepts of properties of matter and their uses in daily life.	<b>K1</b>	Lecture Exercises Quizzes Problem solving	Exams Quizzes Homework Assignments
1.2	Knowledge of the basic principles of Geometrical optics and optical instruments.	<b>K1</b>	Lecture Exercises Quizzes Problem solving	Exams Quizzes Homework Assignments
1.3	Knowledge of the difference between temperature and heat and expressing temperature using different scales.	<b>K1</b>	Lecture Exercises Quizzes Problem solving	Exams Quizzes Homework Assignments
1.4	Knowledge of the difference between heat and specific heat.	<b>K1</b>	Lecture Exercises Quizzes Problem solving	Exams Quizzes Homework Assignments
<b>2.0</b>	<b>Skills</b>			
2.1	Skill of explaining the physical phenomena related to States of	<b>S2</b>	Oral quizzes Class discussion	Homework Oral problems





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	matter, density, and pressure.		Exercises Quizzes Problem solving	
2.2	Skill of Learning, designing, and performing experiments in the labs to demonstrate the concepts, principles and theories learned in the classrooms.	<b>S1</b>	Oral quizzes Class discussion Exercises Quizzes Problem solving	Homework Oral problems
2.3	Skill of applying experiment results to differentiate between the Specific heat capacity for solids experiment.	<b>S1</b>	Oral quizzes Class discussion Exercises Quizzes Problem solving	Homework Oral problems
2.4	Skill of explaining and justifying the results obtained from the experiment.	<b>S1</b>	Oral quizzes Class discussion Exercises Quizzes Problem solving	Homework Oral problems
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	Ability to positive interpersonal relationships among members of the community.	<b>V3</b>	Give time bound task. Group Presentation. Group assignments.	Observation Group discussion Group Report e-learning quizzes
3.2	Ability to continuously explore best practices and policies as well as their application at the highest level of quality.	<b>V2</b>	Give time bound task. Group Presentation. Group assignments.	Observation Group discussion Group Report e-learning quizzes





### C. Course Content

No	List of Topics	Contact Hours
<b>Theoretical</b>		
1.	Physical concepts of properties of matter and their uses in daily life.	5
2.	Heat and its effect on materials and phase transformations.	9
3.	Thermal Expansion: Linear and volume expansion, and applications of thermal expansion (thermometers, thermostats).	6
4.	Specific Heat Capacity and its applications in everyday life.	3
5.	States of matter, density, and pressure.	3
6.	Fundamentals of energy, vibrations, and waves.	6
7.	Geometrical optics and optical instruments.	9
8.	Mid Term 1	2
9.	Mid Term 2	2
<b>Experimental</b>		
1.	Measurement tools and safety introductions.	2
2.	Viscosity experiment.	2
3.	The Ring Method for the Determination of Surface Tension.	2
4.	Specific heat capacity for solids experiment.	4
5.	The validity of Boyle's Law at room temperature.	4
6.	The joule constant.	4
7.	Thermal expansion experiment.	4
8.	Reflection of light at straight and curved mirrors.	4
9.	Determining the focal lengths at collecting and dispersing lenses using collimated light.	4
<b>Total</b>		<b>60</b>

### D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm 1*	6 / 7	15
2.	Mid-term 2*	11/ 12	15





No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
3.	Homework	Every unit of Topics	5
4.	Quizzes	3/ semester	5
5.	Lab Exam	End of the semester	20
6.	Final exam *	End of the semester	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

<b>Essential References</b>	<b>Physics for scientists and engineers;</b> <i>Raymond A. Serway and John W. Jewett</i> ; Cengage Learning; 9 <sup>th</sup> edition; (2013).
<b>Supportive References</b>	<b>Physics;</b> <i>John D. Cutnell and Kenneth W. Johnson</i> ; John Wiley & Sons; 9 <sup>th</sup> edition; (2012). <b>College Physics;</b> <i>Raymond A. Serway and Chris Vuille</i> ; Cengage Learning; 9 <sup>th</sup> edition; (2011). <b>LD Physics Leaflets</b>
<b>Electronic Materials</b>	<a href="http://demonstrations.wolfram.com">http://demonstrations.wolfram.com</a>
<b>Other Learning Materials</b>	<i>Word office for writing reports</i>

### 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms, data show, Smart Board, software, Lab.
<b>Technology equipment</b> (projector, smart board, software)	Computer Lab, and internet lab.
<b>Other equipment</b> (depending on the nature of the specialty)	Library, Wi-Fi internet connections

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Internal committee Reviewer	Direct





Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of Students assessment	Students	Indirect
Quality of learning resources	Peer Reviewer	Direct
The extent to which CLOs have been achieved	Internal Reviewer committee	Direct
Other		

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

**Assessment Methods** (Direct, Indirect)

### G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	<b>DEPARTMENT COUNCIL</b>
<b>REFERENCE NO.</b>	<b>16</b>
<b>DATE</b>	<b>30/12/2024</b>

