

Ministry of Higher Education and Scientific research



**Department of General Science**

**College of Basic Education**

**Salahaddin University-Erbil**

**Subject: Properties of Matter**

**Course Book – *First Year-Second Semester***

**Lecturer: Dr. Wala Dizayee**

**Academic Year: 2023/2024**

# Course Book

<b>1. Course name</b>	<b>Properties of Matter</b>
<b>2. Lecturer in charge</b>	<b>Wala Dizayee</b>
<b>3. Department/ College</b>	<b>General Science/Basic Education</b>
<b>4. Contact</b>	e-mail: wala.dizayee@su.edu.krd Tel: 0750 4666128
<b>5. Time (in hours) per week</b>	<b>Theory: 2 hours /week</b> <b>Practical: 3 hours/week</b>
<b>6. Office hours</b>	
<b>7. Course code</b>	
<b>8. Teacher's academic profile</b>	<a href="https://academics.su.edu.krd/wala.dizayee">https://academics.su.edu.krd/wala.dizayee</a>
<b>9. Keywords</b>	
<p><b>Physical properties of Matter</b> is a fundamental branch of the science of Physics. Are these properties determined without changing the identity of the substance, these are mass, volume, length, shape, color, melting point, boiling point and density. Elasticity, Bending of beams, fluids, dynamics of rigid bodies, hydrostatics and hydrodynamics.</p> <p><b>Dear Students;</b> This coursebook outlines very short notes on Physical properties of Matter for first year undergraduate students of the Department of general Science, College of Basic Education, Salahaddin University-Erbil, Kurdistan Region - Iraq. It is only a guideline to more comprehensive knowledge of the Classical physics. It is highly recommended that the student must read more from the textbooks mentioned in the references below, together with other sources in the internet. I wish you a good luck and success</p>	
<p><b>11. Course objective:</b> Properties of Matter</p> <p>To Study the basic &amp; concepts of Forces.          To Study the concepts of Energy, Work &amp; Power, ...          To Study the Rotation of a Rigid Objects, ...          To Study the concepts of Universal Gravitation.          To Study the Motion in a Circle.          To Study the concepts of Momentum and Collisions,          To study the basics of Elasticity and its importance.          To study the concepts of bending of beams and its applications.          To study the Fluid, Viscosity and Surface tension.          To study the Oscillations, Mechanical Waves &amp; Sound.</p>	
<p><b>12. Student's obligation</b></p> <p>The students shall participate in discussion of the topics and solving practical examples related to the subjects. The exercises will be given to the students as home works. The students will also be asked to prepare reports on selected topics.          - Students should attend in all lectures.</p>	

- Participation in classroom discussions and solving practical examples related to the subjects.
- Home works and quiz.
- The students are required to do two mid-term exams and a final exam.

### **13. Forms of teaching**

- White board.
- Data Show power point presentation.
- Homework and problem solving in the class.

### **14. Assessment scheme**

Breakdown of overall assessment and examination

- Two mid-term exams (two examinations in a year, each 20%) and a final exam.
- Daily Activity.
- Attendance of students.
- Homework.

### **15. Student learning outcome:**

This subject is concerned with the basic science of Modern physics. All the theories and laws of modern physics will be outlined during teaching of this subject.

- The student will be familiar with the basic ideas to understand several concepts about general physics, for example, mass, momentum, energy and, ....., etc.
- To gain experience about how to think scientifically and critically in seeking for new knowledge.

### **16. Course Reading List and References:**

#### **References:**

- 1- Classical Mechanics PLUS, John R. Taylor, ISBN: 9781891389221.
- 2- Introduction to Classical Mechanics with Problems and Solutions. David Morin. Harvard University, USA.
- 3- 1000 Solved Problems in Classical Physics. An Exercise Book, Ahmad A. Kamal
- 4- Solved Problems in Classical mechanics.O.L.Delange & J.Pierrus. Oxford Press.
- 5- Lecture Notes on Classical mechanics. By Sunil Golwala 2007
- 6- See also the internet
- 7- Introduction to physic, 3rd ed ,F.L .Pedrotti, L.S Pedro(2007) .
- 8- Schaums outline series theory and problems of college physiscs.7-edition. Freckerick J.Bueche. (1989).
- 9- Fundamental University Physics", Alonso/Finn.

- 10- Physical Science", Bill W. Tillery.  
 11- The Physical Universe", Konrad B. Krauskopf and Arthur Beiser.  
 12- Magazines and review (internet): Using internet to get more information about the subjects.

<b>17. The Topics:</b>	<b>Lecturer's name</b>
<p>Classical Mechanics</p> <p><b>Chapter 1: Vectors</b></p> <p><b>Chapter 1: Newtons law of Motion</b></p> <p>1.0 Introduction</p> <p>    1.1 First law</p> <p>    1.2 Second law</p> <p>    1.3 Third law</p> <p>    1.4 Gravitational law</p> <p>    1.5 Newton's law of cooling</p> <p>    1.6 Solved problems</p> <p><b>Chapter 2: Projectile Motion</b></p> <p>2.0 Introduction</p> <p>    2.1 Horizontal &amp; vertical components of velocity. Examples</p> <p>    2.2 Solved problems</p> <p><b>Chapter 3: Momentum &amp; Angular Momentum</b></p> <p>3.0 Introduction</p> <p>    3.1 Linear momentum. Examples</p> <p>    3.2 Angular momentum. Examples</p> <p>    3.3 Solved problems</p> <p><b>Chapter 4: Work &amp; Energy</b></p> <p>4.0 Introduction</p> <p>    4.1 Types of Energy. Examples</p> <p>    4.2 Sources of energy. Examples</p> <p>    4.3 Kinetic energy. Examples</p> <p>    4.4 Potential energy. Examples</p> <p>    4.5 Total energy. Examples</p> <p>    4.6 Work. Examples</p> <p>    4.7 Solved problems</p> <p>    4.8 Equilibria and oscillation</p>	<p>Dr. Wala Dizayee</p>
<b>18. Practical Topics (If there is any)</b>	

No Practice and Experiments. It is a theoretical subject.

### **19. Examinations:**

**1. *Compositional:*** In this type of exam the questions usually starts with Explain how, What are the reasons for...?, Why...?, How....?

With their typical answers

Examples should be provided

### **2. *True or false type of exams:***

In this type of exam a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence. Examples should be provided

### **3. *Multiple choices:***

In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. Examples should be provided.

### **20. Extra notes:**

Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks.

### **21. Peer review:**

**All done**

Dr.Wala Dizayee

15.01.2024