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. Tarik Siddik

Academic Year: 2022/2023

January 29th, 2023

Course Book

1. Course name	Properties of Matter
2. Lecturer in charge	Tarik Siddik
3. Department/ College	General Science/Basic Education
4. Contact	e-mail: tarik.reshid@su.edu.krd
5. Time (in hours) per week	Theory: 2 hours /week
	Practical: 3 hours/week
6. Office hours	Monday and Thursday
7. Course code	
8. Teacher's academic	https://sites.google.com/a/su.edu.krd/tarik-siddik/
profile	
9. Keywords	

Physical properties of Matter 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.

Dear Students;

This coursebook outlines very short notes on Mechanical Physics for frst 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.

11. Course objective: Properties of Matter

To Study the concepts of Energy, Work & Power, ...

To Study the Rotation of a Rigid Objects, ...

To Study the concepts of Momentum and Collisions,

To study the basics of Elasticity and its importance.

To study the elasticity of matter

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 & Sound.

12. Student's obligation

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.

الیّره ماموّستا بهرپرسیاریّتی قوتابی خویّندکار رووندهکاتهوه سهبارهت به کوّرسهکه بوّ نموونه ئامادهبوونی قوتابیان له وانهکاندا، له تاقیکردنهوهکاندا، راپوّرت و ووتار نووسین... هتد.

13. Forms of teaching

Data Show power point presentation and the white board.

14. Assessment scheme

Breakdown of overall assessment and examination

Semesters examination (two examinations in a year, each 20%).

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.

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

17. The Topics:	Lecturer's name
Properties of Matter	
Chapter 5: Work & Energy	Dr. Tarik Siddik
1.0 Introduction	
1.1 Types of Energy. Examples	
1.2 Sources of energy. Examples	
1.3 Kinetic energy. Examples	
1.4 Potential energy. Examples	
1.5 Total energy. Examples	
1.6 Work. Examples	
1.7 Solved problems	
Chapter 6: Momentum & Angular Momentum	
1.0Introduction	
1.2Linear momentum. Examples	
1.3Angular momentum. Examples	
1.4Solved problems	
Chapter 7: Oscillations	

1.0Introduction
1.1Equilibrium and oscillation
1.2Simple harmonic oscillation
1.3Coupled harmonic oscillation
1.4Waves. Examples
1.5The wave equation
1.6Phase velocity, group velocity and wave packets
1.7Solved problems
Chapter 8: Rotational Motion of Rigid Bodies
1.0Introduction
1.1description of rotation
1.2newton's second law in rotating coordinate system
1.3Applications
1.4Rigid bodies
1.5Basic Formalism
1.6Torque-free motion
1.7Solved problems
Chapter 9: Elasticity
1.0 Introduction
1.1 Elasticity definition
1.2 Stress
1.3 Strain
1.4 Young Modulus
1.5 Solved examples
18. Practical Topics (If there is any)
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.

Dr. Tarik Siddik 29.01.2023