Pakistan School
Kingdom of Bahrain

Unit 1: Physical Quantities and measurement

Introduction to Physics(3-4)

Physical Quantities(4-5)

We are going to start our first online lecture today. I hope you all will enjoy and learn

- Rules of the class
- Be on time for your classes.
- Respect all participants of the class.
- Do not create any disturbance.
- Raise hand if you have a question teacher will answer when it is suitable time.
- Pay attention to your teacher.
- Enter into the class with your name and CPR number
- Follow the time table.

Introduction

- **Science:**

The word “Science” is derived from the Latin word“scientia” which means knowledge.

The study of nature and behavior of natural things and knowledge gained through observations and experimentations is called Science.

Physics

- **The branch of physical science which deals with the study of matter, energy and their interaction. The laws and principles of physics help us to understand the nature.**

BRANCHES OF PHYSICS

- **Mechanics**:
- **Heat:**
- **Sound:**
- **Light (Optics):**
- **Electricity and Magnetism:**
- **Atomic Physics:**
- **Nuclear Physics:**
- **Plasma Physics:**
- **Geophysics:**

Mechanics

It is the study of motion of objects, its causes and effects.

Heat

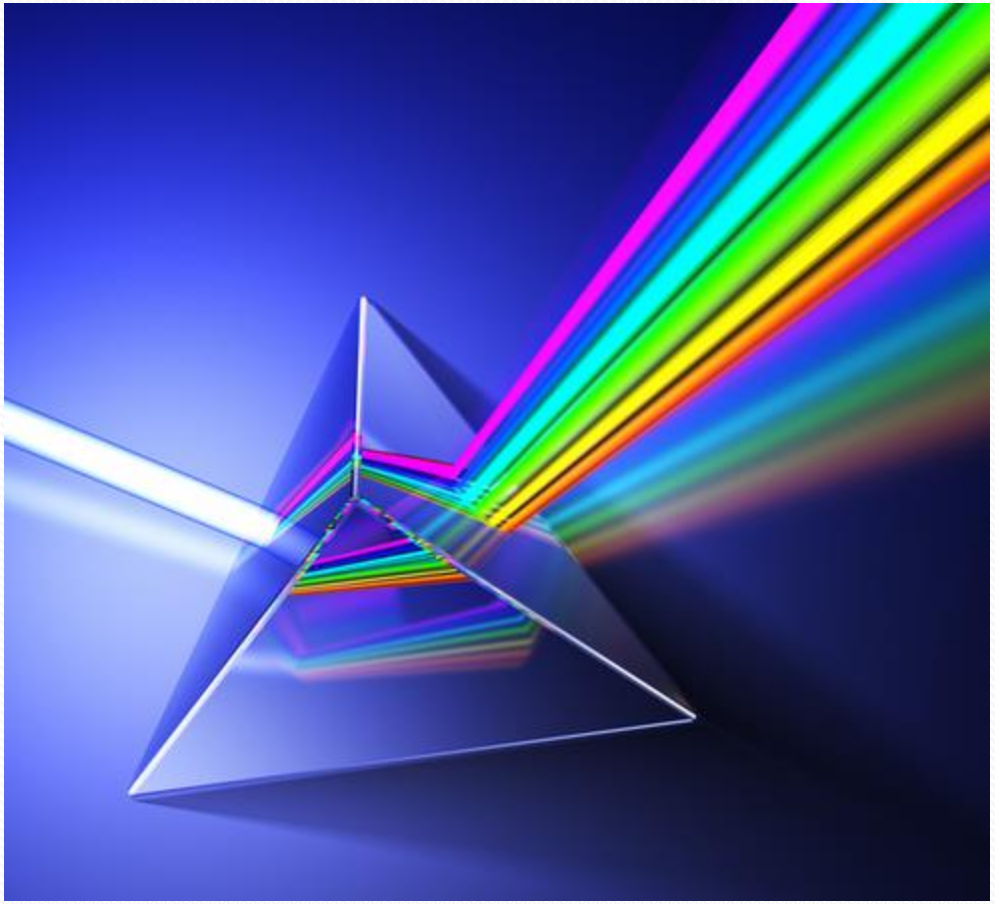
It deals with the nature of heat, modes of transfer and effects of heat.

Sound

It deals with the physical aspects of sound waves , their production, properties and applications.

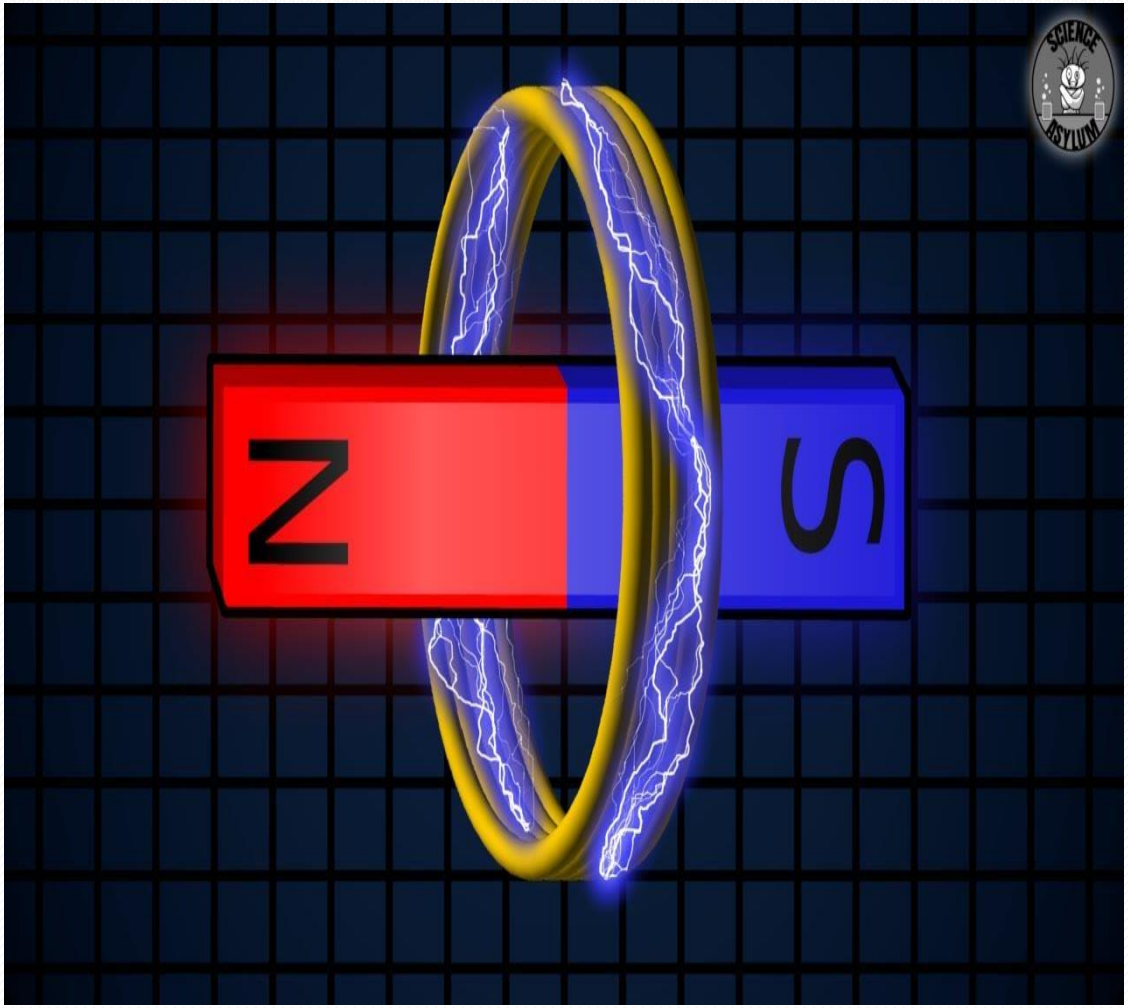
Light (Optics):

It is the study of physical aspects of light, its properties, working and use of optical instruments.



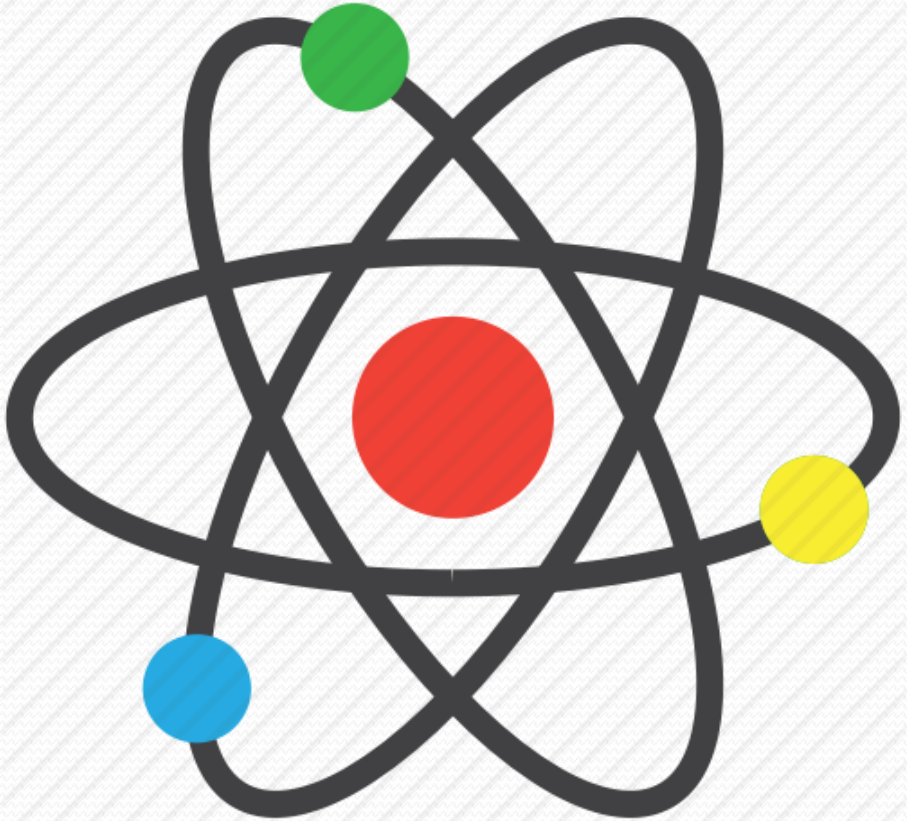
Electricity and Magnetism:

It is the study of the charges at rest and in motion, their effects and their relationship with magnetism.



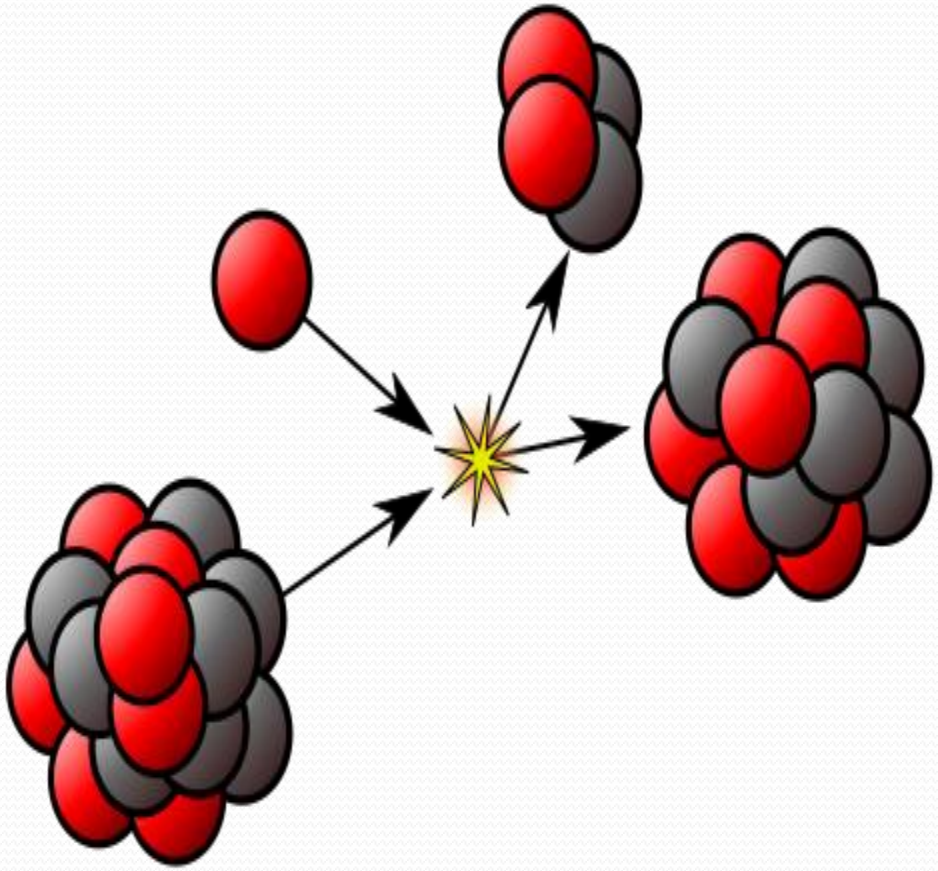
Atomic Physics

It is the study of the structure and properties of atoms.



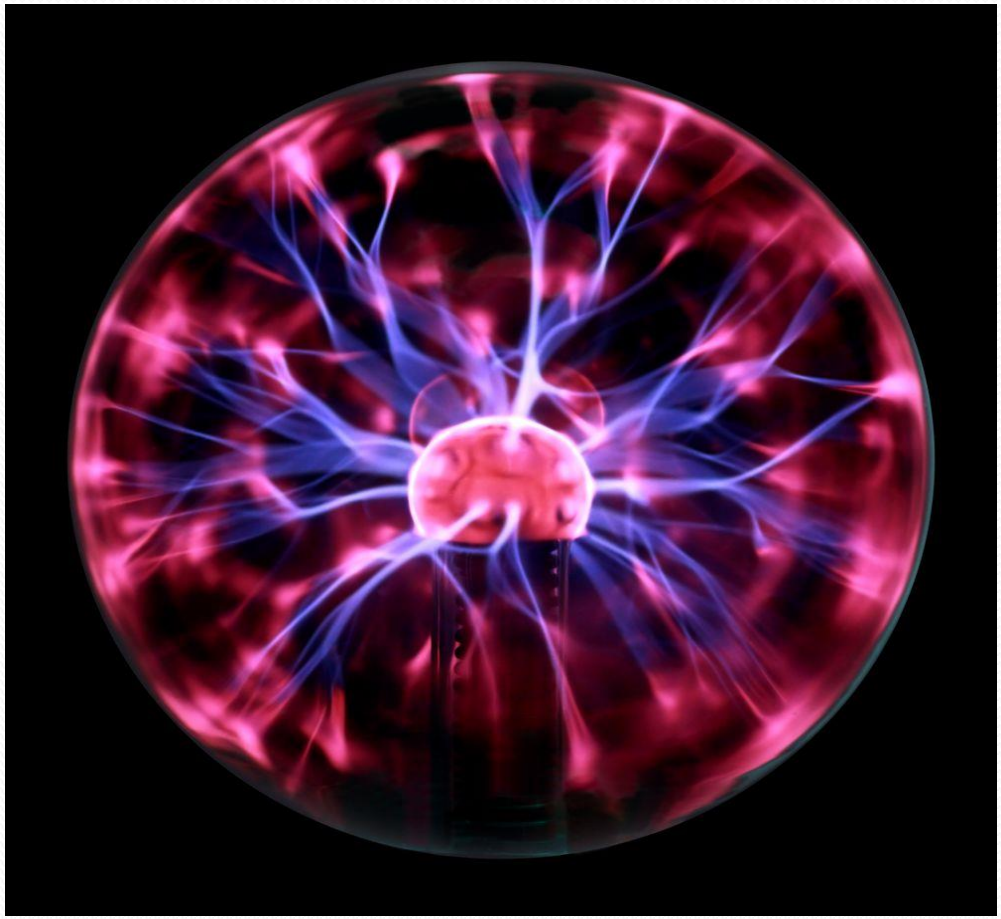
Nuclear Physics

It deals with the properties and behaviour of nuclei and the particles within the nuclei.



Plasma Physics

It is the study of production, properties of the ionic state of matter - the fourth state of matter.



Geophysics

It is the study of the internal structure of the Earth.

Physical Quantities

PHYSICAL QUANTITIES

- **Physical quantities:**

All measurable quantities are known as physical quantities.

Such as length, mass, time etc.

- **Characteristics:** **Physical quantities possess two characteristics in common.**

1. **Numerical value**
2. **Unit in which it is measured.**

For example:

If a mass of a body is 40 kilograms then its numerical value is 40 and unit is kilogram.

- **Types of physical quantities:**

There are two types of physical quantities.

1. **Base quantities**
2. **Derived quantities**

Base quantities

- **Definition: The quantities which form the foundation of other physical quantities are called base quantities. There are seven physical quantities.**

Quantity	
Name	Symbol
Length	l
Mass	m
Time	t
Electric current	I
Intensity of light	L
Temperature	T
Amount of a substance	n

Derived quantities

- **Definition: Derived quantities are the physical quantities which are expressed in terms of base quantities.**

Quantity	
Name	Symbol
Speed	v
Acceleration	a
Volume	V
Force	F
Pressure	p
Density	ρ
Charge	Q

Closure

- **Physics**
- **BRANCHES OF PHYSICS**
- **PHYSICAL QUANTITIES**
- **Base quantities**
- **Derived quantities**