

Chapter 1 : Introduction to Chemistry

Section 1 & 2

Why Study Chemistry?

Section 1-1

- All the “stuff” in the universe is made from building blocks formed in stars.
- These building blocks and everything made from them are called *matter*.
- Chemistry is the study of matter and the changes it undergoes.

Section 1-2

Matter has many different forms.

Mass is a measurement that reflects the amount of matter.

Weight is a measure of mass and the force of gravity on an object.

Weight can change from place to place, but mass is constant.

Section 1-2

Much of matter and its behavior is macroscopic, meaning that it can be observed without a microscope.

The structure, composition, and behavior of all matter can be described on the submicroscopic (atomic) level.

Section 1-2

Chemistry explains events on the atomic level that cause macroscopic observations.

A model is a verbal, visual, or mathematical explanation of experimental data.

Section 1-2

Chemistry is traditionally broken into branches that focus on specific areas such as:

- Organic chemistry
- Inorganic chemistry
- Physical chemistry
- Analytical chemistry
- Biochemistry
- Environmental chemistry
- Industrial chemistry
- Polymer chemistry
- Theoretical chemistry
- Thermochemistry

Section 1-2

Branch	Area of Emphasis	Examples of Emphasis
Organic chemistry	most carbon-containing chemicals	pharmaceuticals, plastics
Inorganic chemistry	in general, matter that does not contain carbon	minerals, metals and nonmetals, semiconductors
Physical chemistry	the behavior and changes of matter and the related energy changes	reaction rates, reaction mechanisms
Analytical chemistry	components and composition of substances	food nutrients, quality control
Biochemistry	matter and processes of living organisms	metabolism, fermentation
Environmental chemistry	matter and the environment	pollution, biochemical cycles
Industrial chemistry	chemical processes in industry	paints, coatings
Polymer chemistry	polymers and plastics	textiles, coatings, plastics
Theoretical chemistry	chemical interactions	many areas of emphasis
Thermochemistry	heat involved in chemical processes	heat of reaction