

*University Hamma Lakhdar of El Oued,*

*Faculty of Exact Sciences*

*Lecture 2 in Technical English/ First Year Master Physics*

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## **Science and fields of science**

**Science** (Latin *scientia*, from *scire*, “to know”), is the term which is used, in its broadest meaning to denote systematized knowledge in any **field**, but applied usually to the organization of objectively verifiable sense experience. The pursuit of knowledge in this context is known as pure science, to distinguish it from applied science, which is the search for practical uses of scientific knowledge, and from technology, through which applications are realized. **Knowledge** of nature originally was largely an **undifferentiated** observation and interrelation of experiences. The Pythagorean scholars distinguished only four sciences: arithmetic, geometry, music, and astronomy. By the time of **Aristotle**, however, other fields could also be recognized: mechanics, optics, physics, meteorology, zoology, and botany. Chemistry remained outside **the mainstream** of science until the time of Robert Boyle in the 17th century, and geology achieved the status of a science only in the 18th century. By that time the study of heat, magnetism, and electricity had become part of physics. During the 19th century scientists finally recognized that pure mathematics differs from the other sciences in that it is logic of relations and does not depend for its structure on the laws of nature. Its applicability in the elaboration of **scientific theories**, however, has resulted in its continued classification among the sciences.

The pure natural sciences are generally divided into two classes: the physical sciences and the biological, or life, sciences. The principal branches among the former are physics, astronomy, chemistry, and geology; the chief biological sciences are botany and zoology. The physical sciences can be subdivided to identify such fields as mechanics, cosmology, physical chemistry, and meteorology; physiology, embryology, anatomy, genetics, and ecology are subdivisions of the biological sciences.

The applied sciences include such fields as aeronautics, electronics, engineering, and metallurgy, which are applied physical sciences, and agronomy and medicine, which are applied biological sciences. In this case also, **overlapping branches** must be recognized. Advances such as these are generally the result of research by teams of specialists representing different sciences, both pure and applied. This interrelationship between theory and practice is as important to the growth of science today as it was at the time of Galileo

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## COMPREHENSION QUESTION

**Exercise 1:** Answer the following questions by referring to the reading passage.

1. What does the term 'science' denote in its broadest meaning?
2. What is applied science known as?
3. In what way does pure math differ from other sciences?
4. What sciences are pure natural sciences generally classified into?
5. Are sciences independent of one another?
6. Translate the underline words in the text to Arabic.

**Exercise 2:** Decide whether each of the following statements is true (T), false (F) or with no information to clarify (N).

1. ....The term **Science** is generally used to denote systematized knowledge in any field.
2. ....Pure science is different from applied one.
3. ....The Pythagorean scholars were not as good as the later ones.
4. .... It was not until the 17th century that chemistry was realized as a science.
5. ....In the 18th century, physics dealt with the study of heat, magnetism, and electricity.
6. ....Mathematics is different from other sciences because it is the most difficult one.
7. ....Mathematics plays an important role in the development of scientific theories.
8. ....Both physical and biological sciences can be further divided into other sciences.
9. ....All classifications of the pure sciences are unchanged.
10. .... Many sciences are closely related to one another.