

University module; Communication Techniques and English Expression (TCE 02)

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Course 04

Biochemistry

Biochemistry is the branch of science that explores the chemical processes and substances that occur within living organisms. It combines principles from both biology and chemistry to understand the molecular mechanisms that underlie biological phenomena.

Biochemists study the structure, function, and interactions of biomolecules such as proteins, carbohydrates, lipids, and nucleic acids (DNA and RNA). They investigate how these molecules are synthesized, modified, and degraded in cells, and how they participate in various biological processes such as metabolism, signal transduction, and gene expression.

Some key areas of study in biochemistry include:

1. **Enzymology:** The study of enzymes, which are biological catalysts that accelerate chemical reactions within cells.
2. **Metabolism:** The set of chemical reactions that occur within an organism to maintain life, including processes like energy production, synthesis of biomolecules, and breakdown of nutrients.
3. **Genetics:** The study of genes and heredity, including the structure and function of DNA, RNA, and the regulation of gene expression.

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4. **Protein Structure and Function:** Understanding the structure of proteins and how their three-dimensional shapes dictate their functions in biological systems.

5. **Molecular Biology:** The study of biological processes at the molecular level, including DNA replication, transcription, and translation.

Biochemistry plays a crucial role in many fields, including medicine, pharmacology, agriculture, and biotechnology. It provides insights into the molecular basis of diseases and helps in the development of new drugs, diagnostic techniques, and therapies.