BIOTECHNOLOGY

Investigation of Past, Present, and Future Applications of Biotechnology

- Applications of present technology and future implications, including careers and history

Usage of Laboratory Safety and Equipment

- Appropriate use of personal protective equipment
- Maintenance of sanitary and safe lab environment
- Proper lab behavior to protect others and self
- Correct and safe usage of lab equipment

Proper Implementation of Laboratory Procedure and Industry Protocols

- Correct following of lab protocols and chemical safety
- Correct documentation and record keeping practices

Utilization of Basic Chemical Principles to Prepare Lab Reagents

- Explain basic chemical concepts (atomic and molecular mass, biomolecules, acid base chemistry, pH scale, and buffers)
- Accurate and correct preparation of solutions
- Preparation and analysis of dilutions

Description of Cell Structure and Components

- Identification of key cellular components along with their function
- Identification of components and reproduction methods of prokaryotic and eukaryotic cells

Identification and Maintenance of Bacteria and Bacterial Cultures

- Proper preparation of bacterial media
- Proper inoculation of agar and broth media
- Identification of common categories of bacteria

Comparison of Nucleic Acid and Proteins and Genetic Information Flow in Cells

- Nucleic acid structure and comparison with replication process
- Structure and function of proteins along with separation techniques and denaturation of proteins
- Protein synthesis according to the central dogma of molecular biology
- Describe the various methods of mutations and the consequences of those mutations

Explanation and Usage of Recombinant DNA Techniques in Bacteria

- Describe plasmid usage bacterial transformation and isolation processes of those plasmids