

1. Core Cell Biology and Biochemistry

- Cell structure and specialisation
- Membrane transport
- Enzymes
- Photosynthesis
- Cellular respiration
- Biological organisation
- Biochemical structure-function links
- Energy and matter in living systems

2. Genetic Processes

- DNA, genes, and chromosomes
- Meiosis and variation
- Inheritance patterns
- Mutation and gene expression
- Genetic continuity
- Introductory biotechnology contexts, such as selective breeding, genetic testing, or genetic engineering examples where appropriate
- Genetic models and evidence

3. Biodiversity and Evolution

- Classification systems
- Biodiversity
- Evolutionary mechanisms
- Natural selection
- Evidence for evolution
- Relationships among organisms
- Biodiversity and stability
- Environmental change and adaptation

4. Animal Structure and Function

- Digestive system
- Respiratory system
- Circulatory system
- Excretory system
- Nervous and endocrine coordination at an introductory course level
- Homeostasis
- Interactions among body systems
- Structure-function relationships in animals

5. Plant Structure, Growth, and Function

- Plant tissues and organs
- Transport in plants
- Plant reproduction
- Growth and development
- Environmental responses
- Plant structure-function relationships
- Plant biology in ecological and environmental contexts

6. Ecology and Population Dynamics

- Ecosystem interactions
- Food webs and energy pyramids
- Nutrient cycles
- Population change
- Carrying capacity
- Human impact and conservation
- Ecosystem balance, disturbance, and sustainability

7. Shared Scientific Practices

- Investigable questions and hypotheses
- Variables, controls, assumptions, and limitations
- Measurement, units, significant figures, and unit consistency
- Uncertainty, error, reliability, and validity
- Data tables, graphs, diagrams, and model interpretation
- Claim-evidence-reasoning
- Method evaluation and improvement
- Safety, ethics, and responsible scientific practice