



## Biotechnology High School

### **1.0 Understands and applies the skills of scientific inquiry.**

- 1.1 Uses scientific inquiry to design, conduct, and analyze scientific investigations.
- 1.2 Identifies questions and concepts that guide scientific investigations.
- 1.3 Understands that different kinds of questions suggest different kinds of investigations.
- 1.4 Uses appropriate models when necessary.
- 1.5 Develops hypothesis.
- 1.6 Identifies controls and variables.
- 1.7 Designs and executes scientific investigations.
- 1.8 Selects and uses appropriate tools, technology and techniques to gather data.
- 1.9 Makes appropriate qualitative and quantitative observations.
- 1.10 Recognizes the importance of multiple trials with reproducible results.
- 1.11 Organizes data and observations efficiently, including creating appropriate tables and graphs.
- 1.12 Analyzes and evaluates the data and observations.
- 1.13 Integrates data and observations to draw appropriate conclusions.
- 1.14 Accounts for errors in investigations.
- 1.15 Uses evidence to infer possible applications or extensions for further inquiry.
- 1.16 Uses various methods to communicate experimental methods, observations, results, and interpretations.
- 1.17 Learns how to correctly debate ethical issues.
- 1.18 Learns to evaluate an ethical argument.
- 1.19 Uses proper documentation and citing of a lab notebook.
- 1.20 Uses appropriate safety procedures when conducting investigations.
- 1.21 Recognizes that safety concerns change with different procedures.

### **3.0 Understands and applies concepts, principles and theories pertaining to life and its interactions.**

- 3.1 Understands and applies knowledge of the cell and its processes.
- 3.2 Identifies cell structures.
- 3.3 Describes protein synthesis.
- 3.4 Describes transformation.

- 3.5 Describes DNA replication.
- 3.6 Describes gene regulation and expression.
- 3.7 Understands and applies knowledge of the molecular basis.
- 3.8 Demonstrates restriction mapping in lab.
- 3.9 Describes the different types of mutations.
- 3.10 Explains evolution of antibiotic resistant bacteria.
- 3.11 Understands the identification and structure of living organisms.
- 3.12 Explains the role plasmids play in genetics.
- 3.13 Explains the role bacteria play in genetics.

**4.0 Understands and applies concepts and theories pertaining to matter, its composition and the forces that govern it.**

- 4.1 Understands and applies knowledge of chemical reactions.
- 4.2 Understands the difference between solute, solvent and solution.
- 4.3 Identifies factors that effect solubility (like dissolve likes).
- 4.4 Determines the concentration of a solution in molarity, ppm, and percent solution.
- 4.5 Determines the dilution of a solution.

**5.0 Understands the nature of science.**

- 5.1 Understands how science develops and changes over time.
- 5.2 Describes and demonstrates the use of NCIB site.
- 5.3 Understands the dynamic relationship between science and society.
- 5.4 Explains how genetic fiber printing has changed society.
- 5.5 Explains how bioethics influences society.