## 🔬 Science Curriculum Overview

### *(Foundations of Scientific Inquiry – Broad Overview & Methodology)*

### 🌟 Core Focus

**Welcome to your personalized science learning journey!**  
This module introduces students to the core of scientific thinking, emphasizing systematic inquiry, ethical responsibility, and foundational knowledge that supports all STEAM fields.

### 🧠 Key Concepts & Learning Goals

| Theme | Topics |
| --- | --- |
| **1. What is Science?** | Science is the systematic study of the natural world through observation and experimentation. It is empirical, testable, and falsifiable. Scientific thinking values curiosity, skepticism, and critical reasoning. |
| **2. Scientific Method** | The scientific method is a structured approach to inquiry involving Observation, Question, Hypothesis, Experiment, Analysis, Conclusion, and Communication. It is iterative and builds knowledge through repeatable, transparent steps. |
| **3. Branches of Science** | An introduction to the major scientific disciplines: Physical Sciences (Physics, Chemistry), Life Sciences (Biology, Health, Environment), Earth & Space Sciences (Geology, Astronomy), and a brief mention of Social Sciences. |
| **4. Lab Safety** | Lab safety includes protocols and practices that help prevent accidents and ensure a safe working environment, such as wearing goggles, using tools correctly, and following clean-up procedures. |
| **5. Research Methods** | Covers observation, measurement, documentation, and variable control. Teaches students how to design and conduct controlled experiments and record findings accurately. |
| **6. Data Analysis** | Data analysis involves interpreting results using charts, graphs, and statistical reasoning to draw evidence-based conclusions. This supports the development of math skills in a science context. |
| **7. Scientific Communication** | Scientific ideas must be shared clearly and honestly. Students learn how to present their findings using visual tools, reports, and presentations, and explore how peer review ensures accuracy and credibility. |
| **8. Ethics in Science** | Responsible research includes honesty, transparency, and avoiding bias. Introduces famous case studies of ethical breaches and discusses the importance of reproducibility and peer review. |

### 🧪 Hands-On Activities

* **Mystery Tube** (inferring unseen mechanisms)
* **Paper Towel Absorbency Lab** (controlled experiment design)
* **“Design a Plant” Exercise** (evidence-based hypothesis creation)
* **Build a Science Journal** (ongoing observational records)

### 🧩 STEAM Integration

* **Science**: Core foundation of systematic inquiry
* **Technology**: Using digital tools for measurement and documentation
* **Engineering**: Framing problems and testing design solutions
* **Arts**: Science posters, diagramming experiments
* **Math**: Measuring, charting, and analyzing results

### 🌐 21st Century Skills Emphasized

* Critical Thinking
* Evidence-Based Reasoning
* Ethical Responsibility
* Communication & Collaboration