First Grade Curriculum

Theme: Patterns and Cycles
Duration: 3 Months (Approximately 12 weeks)

Curriculum Overview

- **Unit 1: Plant Life Cycles** (Weeks 1–4)
- **Unit 2: Weather Patterns** (Weeks 5–8)
- **Unit 3: Introduction to Coding** (Weeks 9–12)

Unit 1: Plant Life Cycles

Duration: 4 Weeks

Unit Objectives

- Understand the stages of plant growth from seed to mature plant.
- Identify what plants need to grow and survive.
- Develop observation and recording skills through journaling.
- Recognize the importance of plants in our environment.
- Enhance writing and communication skills.

Week 1: Introduction to Plant Life Cycles

Lesson 1: From Seed to Plant

- **Duration**: 60 minutes
- **Activities**:
    - **Story Time**: Read **"The Tiny Seed" by Eric Carle**.
        - Discuss the journey of a seed and the stages of plant growth.
    - **Sequencing Activity**:
        - Provide pictures of the plant life cycle stages (seed, sprout, seedling, mature plant, flower, fruit).
        - Students arrange them in the correct order.
    - **Vocabulary Introduction**:
        - Introduce terms like germination, growth, pollination, and reproduction.
- **Assessment**:

- Students correctly sequence the life cycle stages.
- Participation in discussions.

Lesson 2: Planting Seeds

- **Duration**: 60 minutes
- **Activities**:
  - **Hands-On Activity**:
    - Students plant seeds (e.g., beans) in transparent cups to observe root growth.
    - Label cups with names and dates.
  - **Observation Journal**:
    - Start a journal to record observations with drawings and descriptions.
- **Assessment**:
  - Accuracy and detail in journal entries.
  - Proper planting technique.

Week 2: Understanding Plant Needs

Lesson 3: What Do Plants Need to Grow?

- **Duration**: 60 minutes
- **Activities**:
  - **Experiment Setup**:
    - Set up several plants under different conditions (e.g., with/without water, light, soil).
  - **Hypothesis Formation**:
    - Students predict outcomes for each condition.
  - **Data Recording**:
    - Create a class chart to track changes over time.
- **Assessment**:
  - Thoughtfulness of predictions.
  - Engagement in setting up the experiment.

Lesson 4: Parts of a Plant

- **Duration**: 60 minutes
- **Activities**:
  - **Interactive Lesson**:
    - Use diagrams to teach about roots, stems, leaves, flowers, and seeds.
  - **Labeling Activity**:
    - Students label parts on a plant diagram worksheet.
- **Assessment**:
  - Correct labeling of plant parts.
  - Participation in the lesson.

Lesson 5: The Role of Roots and Stems

- **Duration**: 60 minutes
- **Activities**:
    - **Celery Experiment**:
        - Place celery stalks in colored water to observe how stems transport water.
    - **Observation and Discussion**:
        - Students record changes and discuss the function of roots and stems.
- **Assessment**:
    - Accurate observations.
    - Understanding of stem function.

Week 3: Exploring Plant Growth

Lesson 6: Leaves and Photosynthesis

- **Duration**: 60 minutes
- **Activities**:
    - **Simplified Explanation**:
        - Introduce photosynthesis and how leaves help make food for the plant.
    - **Leaf Art**:
        - Create leaf rubbings using crayons and paper.
- **Assessment**:
    - Ability to explain the basic concept of photosynthesis.
    - Creativity in art activity.

Lesson 7: Flowers and Pollination

- **Duration**: 60 minutes
- **Activities**:
    - **Role-Playing**:
        - Simulate pollination with students acting as bees transferring pollen between paper flowers.
    - **Craft Activity**:
        - Make paper flowers with visible stamens and pistils.
- **Assessment**:
    - Participation in role-play.
    - Understanding of pollination process.

Lesson 8: Fruits and Seeds

- **Duration**: 60 minutes
- **Activities**:
    - **Fruit Dissection**:
        - Examine different fruits to find and compare seeds.

- ○ **Seed Sorting**:
    - ■ Sort seeds by size, shape, or type.
- ● **Assessment**:
  - ○ Correct identification of seeds.
  - ○ Organization in sorting activity.

Lesson 9: Plant Growth Observation

- ● **Duration**: 60 minutes
- ● **Activities**:
  - ○ **Journal Update**:
    - ■ Students draw and write about changes in their plants.
  - ○ **Measurement Activity**:
    - ■ Measure plant height and record data.
- ● **Assessment**:
  - ○ Detail in journal entries.
  - ○ Accuracy in measurements.

Lesson 10: Plant Needs Experiment Review

- ● **Duration**: 60 minutes
- ● **Activities**:
  - ○ **Results Discussion**:
    - ■ Review the plants from Lesson 3 and discuss outcomes.
  - ○ **Conclusion Writing**:
    - ■ Students write about why some plants thrived while others did not.
- ● **Assessment**:
  - ○ Understanding demonstrated in written conclusions.
  - ○ Ability to connect observations to plant needs.

Week 4: The Importance of Plants

Lesson 11: Plants in Our Environment

- ● **Duration**: 60 minutes
- ● **Activities**:
  - ○ **Nature Walk**:
    - ■ Identify different plants around the school.
    - ■ Discuss plant diversity and habitats.
  - ○ **Collection**:
    - ■ Gather leaves or flowers for classroom study.
- ● **Assessment**:
  - ○ Active participation during the walk.
  - ○ Respect for nature (e.g., not damaging plants).

Lesson 12: How We Use Plants

- **Duration**: 60 minutes
- **Activities**:
    - **Brainstorming Session**:
        - List products we get from plants (food, medicine, clothing).
    - **Collage Making**:
        - Create collages from magazine cut-outs showing plant-based products.
- **Assessment**:
    - Contributions to the list.
    - Creativity and relevance in collages.

Lesson 13: Caring for Plants and the Environment

- **Duration**: 60 minutes
- **Activities**:
    - **Story Time**:
        - Read **"The Lorax" by Dr. Seuss** to discuss environmental stewardship.
    - **Discussion**:
        - Talk about ways to protect plants and the environment.
- **Assessment**:
    - Engagement in discussion.
    - Ideas shared about environmental care.

Lesson 14: Plant Life Cycle Review

- **Duration**: 60 minutes
- **Activities**:
    - **Game Time**:
        - Play a plant life cycle board game designed to reinforce concepts.
    - **Group Activity**:
        - Students work in teams to answer questions.
- **Assessment**:
    - Correct answers.
    - Team collaboration.

Lesson 15: Culminating Project

- **Duration**: Multiple sessions totaling 120 minutes
- **Activities**:
    - **Project Creation**:
        - Students choose to create a poster, booklet, or model demonstrating the plant life cycle.
    - **Presentation**:
        - Share projects with the class.

- **Assessment**:
  - Accuracy and completeness of projects.
  - Presentation skills.

Ongoing Assessments Throughout Unit

- **Observation Journals**: Regular entries with drawings and notes.
- **Participation**: Engagement in class activities and discussions.
- **Worksheets and Quizzes**: Periodic assessments to gauge understanding.

Standards Alignment

- **NGSS 1-LS1-1**: Use materials to design a solution to a human problem by mimicking how plants use their external parts to help them survive.
- **CCSS.ELA-LITERACY.W.1.2**: Write informative texts to examine a topic and convey ideas.

Unit 2: Weather Patterns

Duration: 4 Weeks

Unit Objectives

- Observe and record weather data daily.
- Identify patterns in weather over time.
- Understand the relationship between weather and seasons.
- Learn how to interpret basic weather instruments.
- Develop skills in data representation through charts and graphs.

Week 5: Introduction to Weather

Lesson 1: Weather Data Collection

- **Duration**: 45 minutes
- **Activities**:
  - **Weather Journal**:
    - Introduce a daily weather journal for recording observations.
  - **Instrument Demonstration**:
    - Show how to use a thermometer and rain gauge.
- **Assessment**:
  - Correct use of instruments.
  - Accurate journal entries.

Lesson 2: Types of Weather

- **Duration**: 60 minutes
- **Activities**:
  - **Interactive Lesson**:
    - Discuss different weather conditions (sunny, rainy, cloudy, snowy).
  - **Weather Wheel Craft**:
    - Create a weather wheel to illustrate various weather types.
- **Assessment**:
  - Participation in discussions.
  - Completion and correctness of weather wheels.

Week 6: Recording and Analyzing Weather Data

Lesson 3: Daily Weather Tracking

- **Duration**: 15 minutes daily
- **Activities**:
  - **Routine**:
    - Record temperature, precipitation, and sky conditions each day.
  - **Discussion**:
    - Talk about any changes observed.
- **Assessment**:
  - Consistency in data recording.
  - Engagement in daily discussions.

Lesson 4: Analyzing Weather Patterns

- **Duration**: 60 minutes
- **Activities**:
  - **Graphing Activity**:
    - Create bar graphs showing the number of sunny vs. rainy days.
  - **Interpretation**:
    - Discuss what the graphs reveal about the weather patterns.
- **Assessment**:
  - Accuracy of graphs.
  - Ability to interpret data.

Lesson 5: Seasons and Weather Changes

- **Duration**: 60 minutes
- **Activities**:
  - **Interactive Lesson**:
    - Explore how weather changes with the seasons.
  - **Seasonal Clothing Sorting**:

■ Match clothing items to appropriate seasons.
- **Assessment**:
  - Correct matching in sorting activity.
  - Understanding of seasonal weather patterns.

Week 7: Understanding Weather Phenomena

Lesson 6: Clouds and Precipitation

- **Duration**: 60 minutes
- **Activities**:
  - **Cloud Identification**:
    - Learn about different types of clouds (cirrus, cumulus, stratus).
  - **Cloud Art**:
    - Use cotton balls to create cloud types on paper.
- **Assessment**:
  - Correct identification and representation of clouds.
  - Neatness and creativity.

Lesson 7: Wind and Weather

- **Duration**: 60 minutes
- **Activities**:
  - **Wind Vane Craft**:
    - Create a simple wind vane to observe wind direction.
  - **Outdoor Activity**:
    - Test wind vanes and record wind direction.
- **Assessment**:
  - Proper construction of wind vanes.
  - Accurate observations.

Lesson 8: Extreme Weather

- **Duration**: 60 minutes
- **Activities**:
  - **Discussion**:
    - Talk about storms, hurricanes, and other extreme weather events.
  - **Safety Tips**:
    - Learn what to do during severe weather.
- **Assessment**:
  - Participation in discussions.
  - Ability to recall safety procedures.

Lesson 9: The Water Cycle

- **Duration**: 60 minutes
- **Activities**:
  - **Simplified Explanation**:
    - Introduce evaporation, condensation, and precipitation.
  - **Water Cycle Diagram**:
    - Students draw and label the stages of the water cycle.
- **Assessment**:
  - Correctness of diagrams.
  - Understanding of concepts.

Lesson 10: Weather Forecasting

- **Duration**: 60 minutes
- **Activities**:
  - **Role-Playing**:
    - Students act as weather forecasters using data collected.
  - **Presentation**:
    - Share weather reports with the class.
- **Assessment**:
  - Clarity of presentations.
  - Use of accurate data.

Week 8: Culminating Activities

Lesson 11: Weather Instruments Review

- **Duration**: 60 minutes
- **Activities**:
  - **Hands-On Practice**:
    - Review how to use and read weather instruments.
  - **Quiz**:
    - Short assessment on instrument usage.
- **Assessment**:
  - Correct responses on the quiz.
  - Demonstrated proficiency.

Lesson 12: Weather Patterns Project

- **Duration**: Multiple sessions totaling 120 minutes
- **Activities**:
  - **Group Project**:
    - Create a poster or model demonstrating weather patterns and the water cycle.
  - **Research**:
    - Use books or supervised internet access for additional information.
- **Assessment**:

- ○ Teamwork.
- ○ Accuracy and creativity in projects.

Lesson 13: Presentations

- ● **Duration**: 60 minutes
- ● **Activities**:
  - ○ **Group Presentations**:
    - ■ Share projects with the class.
  - ○ **Peer Feedback**:
    - ■ Provide positive comments and ask questions.
- ● **Assessment**:
  - ○ Presentation skills.
  - ○ Engagement during peers' presentations.

Lesson 14: Weather Poetry

- ● **Duration**: 60 minutes
- ● **Activities**:
  - ○ **Creative Writing**:
    - ■ Write simple poems about weather (e.g., acrostic, haiku).
  - ○ **Illustration**:
    - ■ Draw accompanying pictures.
- ● **Assessment**:
  - ○ Use of descriptive language.
  - ○ Effort in writing and illustrating.

Lesson 15: Reflection and Celebration

- ● **Duration**: 60 minutes
- ● **Activities**:
  - ○ **Class Discussion**:
    - ■ Reflect on what was learned and favorite activities.
  - ○ **Certificates**:
    - ■ Award "Weather Watcher" certificates.
  - ○ **Weather-Themed Party**:
    - ■ Enjoy snacks and games related to weather.
- ● **Assessment**:
  - ○ Participation in reflection.
  - ○ Demonstration of knowledge during discussions.

Ongoing Assessments Throughout Unit

- ● **Weather Journals**: Daily entries and observations.
- ● **Class Participation**: Engagement in activities and discussions.

- **Worksheets and Quizzes**: Regular assessments to monitor understanding.

Standards Alignment

- **NGSS 1-ESS1-2**: Make observations at different times of year to relate the amount of daylight to the time of year.
- **CCSS.MATH.CONTENT.1.MD.C.4**: Organize, represent, and interpret data with up to three categories.

Unit 3: Introduction to Coding

Duration: 4 Weeks

Unit Objectives

- Understand basic coding concepts such as sequences and loops.
- Use unplugged activities to simulate coding and algorithms.
- Develop problem-solving and logical thinking skills.
- Introduce basic computer operations.
- Encourage creativity through simple programming tasks.

Week 9: Basic Coding Concepts

Lesson 1: Sequencing with Storytelling

- **Duration**: 45 minutes
- **Activities**:
  - **Story Sequencing**:
    - Use picture cards to arrange stories in the correct order.
  - **Discussion**:
    - Relate sequencing to giving instructions and algorithms.
- **Assessment**:
  - Correct sequencing of stories.
  - Ability to explain reasoning.

Lesson 2: Understanding Algorithms

- **Duration**: 60 minutes
- **Activities**:
  - **Definition**:
    - Introduce the term "algorithm" as a set of instructions.
  - **Activity**:

■ Write step-by-step instructions for a simple task (e.g., brushing teeth).
- **Assessment**:
    - Clarity and completeness of instructions.
    - Understanding of the concept.

Lesson 3: Coding with Movement

- **Duration**: 60 minutes
- **Activities**:
    - **Human Robot Activity**:
        ■ Students give commands to a "robot" (another student) to perform tasks.
    - **Reflection**:
        ■ Discuss the importance of precise instructions.
- **Assessment**:
    - Effectiveness of commands.
    - Success in task completion.

Week 10: Introducing Loops and Conditionals

Lesson 4: Exploring Loops

- **Duration**: 60 minutes
- **Activities**:
    - **Explanation**:
        ■ Teach that loops repeat actions.
    - **Unplugged Activity**:
        ■ Use clapping patterns or dance moves to demonstrate loops.
- **Assessment**:
    - Participation in activities.
    - Ability to identify loops.

Lesson 5: Conditionals with "If/Then" Statements

- **Duration**: 60 minutes
- **Activities**:
    - **Introduction**:
        ■ Explain conditionals using examples (e.g., "If it's raining, then use an umbrella").
    - **Game**:
        ■ Play a game where students act out actions based on conditional statements.
- **Assessment**:
    - Correct responses to conditionals.
    - Engagement in the game.

Lesson 6: Unplugged Coding Challenges

- **Duration**: 60 minutes
- **Activities**:
  - **Maze Navigation**:
    - Create floor mazes; students write instructions to navigate through them.
  - **Peer Testing**:
    - Exchange instructions and test for accuracy.
- **Assessment**:
  - Clarity of written instructions.
  - Ability to follow peers' algorithms.

Week 11: Introduction to Computer Coding

Lesson 7: Basic Computer Skills

- **Duration**: 60 minutes
- **Activities**:
  - **Computer Introduction**:
    - Teach how to use a mouse, keyboard, and basic computer operations.
  - **Digital Citizenship**:
    - Discuss safe and responsible use of technology.
- **Assessment**:
  - Proper use of computer hardware.
  - Understanding of safety rules.

Lesson 8: Exploring Coding Apps

- **Duration**: 60 minutes
- **Activities**:
  - **Hands-On Practice**:
    - Use beginner-friendly coding apps like **ScratchJr** or **Code.org** activities.
  - **Guided Projects**:
    - Create simple programs with guidance.
- **Assessment**:
  - Completion of projects.
  - Ability to use basic coding blocks.

Lesson 9: Creating Simple Animations

- **Duration**: 60 minutes
- **Activities**:
  - **Project Work**:
    - Students design and code a simple animation or story.
  - **Creativity Encouragement**:
    - Emphasize original ideas and storytelling.
- **Assessment**:

- ○ Originality and functionality of animations.
- ○ Engagement in the creative process.

Week 12: Culminating Projects and Review

Lesson 10: Coding a Short Story

- **Duration**: Multiple sessions totaling 120 minutes
- **Activities**:
  - ○ **Planning**:
    - ■ Outline characters, settings, and events for a coded story.
  - ○ **Coding**:
    - ■ Implement the story using a coding app.
- **Assessment**:
  - ○ Completeness of story elements.
  - ○ Proper use of coding concepts.

Lesson 11: Debugging and Testing

- **Duration**: 60 minutes
- **Activities**:
  - ○ **Peer Review**:
    - ■ Swap projects to identify and fix errors.
  - ○ **Collaboration**:
    - ■ Work together to improve projects.
- **Assessment**:
  - ○ Ability to debug code.
  - ○ Cooperative skills.

Lesson 12: Presenting Coding Projects

- **Duration**: 60 minutes
- **Activities**:
  - ○ **Presentations**:
    - ■ Share projects with the class.
    - ■ Explain the coding process used.
- **Assessment**:
  - ○ Clarity of explanations.
  - ○ Confidence during presentation.

Lesson 13: Reflecting on Learning

- **Duration**: 60 minutes
- **Activities**:
  - ○ **Discussion**:

■ Talk about challenges faced and skills learned.
○ **Feedback Session**:
■ Encourage positive feedback among peers.
● **Assessment**:
○ Thoughtfulness in reflection.
○ Respectfulness during feedback.

Lesson 14: Coding Celebration

● **Duration**: 60 minutes
● **Activities**:
○ **Certificates**:
■ Award "First Grade Coder" certificates.
○ **Class Party**:
■ Celebrate with games and snacks.
● **Assessment**:
○ Participation in celebration.
○ Display of coding knowledge.

Ongoing Assessments Throughout Unit

● **Coding Journals**: Notes and reflections on coding activities.
● **Participation**: Active involvement in lessons and activities.
● **Projects**: Evaluation of coding projects for understanding and creativity.

Standards Alignment

● **CSTA K-12 Computer Science Standards**:
○ **1A-AP-08**: Model daily processes by creating and following algorithms.
● **CCSS.ELA-LITERACY.W.1.2**: Write informative texts to convey ideas.

Additional Notes for Educators

- **Differentiation**:
  - Provide additional support or challenges based on individual student needs.
- **Technology Access**:
  - Ensure all students have access to devices for coding activities.
- **Parental Involvement**:
  - Encourage parents to explore coding apps at home.

By expanding each unit and adding detailed lesson plans, this comprehensive first-grade curriculum provides a rich and engaging educational experience over a three-month period. The curriculum is designed to build foundational knowledge while promoting critical thinking, creativity, and a love for learning.