**วิชา(Subject) ....Science.......**

**ช่วงชั้น (Level) …2 (P.4-6)…..**

**20 weeks(2 periods/week): Teaching 36 periods and Examination 4 periods/semester, Total: 40 periods**

| **ชั้นประถมศึกษาปีที่ 4 (Primary 4)** | | **ชั้นประถมศึกษาปีที่ 5 (Primary 5)** | | **ชั้นประถมศึกษาปีที่ 6 (Primary 6)** | |
| --- | --- | --- | --- | --- | --- |
| **7** | **8** | **9** | **10** | **11** | **12** |
| **ภาคเรียนที่ (Semester) 1** | **ภาคเรียนที่ (Semester) 2** | **ภาคเรียนที่ (Semester) 1** | **ภาคเรียนที่ (Semester) 2** | **ภาคเรียนที่ (Semester) 1** | **ภาคเรียนที่ (Semester) 2** |
| **Systems**   1. **Air and the Respiratory System (18 periods)**    1. Properties of Air (2 periods)    2. Composition of air (1 period)    3. Nitrogen, oxygen, carbon dioxide gases and its use. (2 period)    4. Cellular respiration and Photosynthesis (2 period)    5. Energy and Photosynthesis (2 period)    6. Respiration in plants (2 period)    7. Respiration in animals (2 periods)    8. Respiration in Human (5 periods)   1.8.1 Functions and Parts of respiratory system in human (1 periods)  1.8.2. Lung Model (Respiratory system model) (2 periods)  1.8.3. Inhale and exhale (diaphragm, ribcage) (1 period)  1.8.4. Exchange of gases in the lung (air sacs) (1 period)   1. **The Circulatory and Transport Systems in Plants and Humans (18 periods)**    1. Transport system in plants (4 periods)       1. Xylem and Phloem (2 periods)       2. Transport system and photosynthesis in plant (2 periods)    2. Transport system in human (circulatory system) (14 periods)       1. Function and Parts of circulatory system (1 period)       2. Heart (2 periods)       3. Blood (4 periods)       4. Blood vessels (2 periods)       5. Heartbeat and pulse (1 period)       6. The circulation of blood in human body. (2 periods)       7. The relation of respiratory system, transport system (circulatory system) and digestive system. (2 periods)   **(36 periods)** | **Energy**   1. **Heat and Temperature (10 periods)**    1. What heat is? And Sources of heat (1 period)    2. Uses of heat (1 period)    3. Temperature of an objects and Use a thermometer (1 period)    4. Differentiate between heat and temperature (1 period)    5. Heat flows (1 period)    6. Effects of heat gain/loss in daily life (1 period)    7. Expansion and Contraction (2 periods)    8. Heat transfer (1 period)    9. Good and bad conductors of heat and use in our daily lives (1 period)   **Cycles**   1. **Matter and Its Three States (6 periods)**    1. What is matter? (1 period)    2. Mass and volume (2 periods)    3. State of matter (1 period)    4. Changing state of matter (2 periods) 2. **Water (4 periods)**    1. Water and its Three States, Changing states of water (Heat gain/Heat loss) (1 period)    2. Evaporation of water (1 period)    3. The Water Cycle and Precious Water (1 period)    4. Importance of the water cycle and Uses of water, Conservation of water and Water Pollution (1 period)   **(36 periods)** | **Systems**   1. **Electricity ( 10 periods )**    1. Where does electricity come from? (2 periods )    2. Electric circuits (2 periods )    3. Circuit diagram (1 period )    4. Factor affecting the amount of current flowing in a circuit. (2 periods)    5. Electrical conductors and insulators. (1 period )    6. Proper use of electricity. (1 period)    7. Conserving electricity. (1 period) 2. **Simple Machines (8 periods)**    1. Uses of machines(1 period)    2. Kinds of simple machines(1 period)   3.2.1 Levers (first class, second class and third class) (2 periods)  3.2.2. Pulleys (fixed pulley, movable pulley and combined pulley) (1 period)  3.2.3. Inclined planes(1 period)  3.2.4. Screw (1 period)  3.2.5. Wheel and axle(1periods)  **3. The solar system. (10 periods )**  3.1. What is the solar system? (2 periods)  3.2. The sun (1 period)  3.3. The Earth (1 period)  3.4. Movement of the Earth.(2 periods)  3.5. The Moon (1 period)  3.6. Phases of the moon. (2 periods)  3.7. Artificial satellites(1 period)  4. **The Basic Units of Life (8 periods)**  4.1. What is the cells? (2 periods)  4.2. plant cells (2 periods)  4.3. Animal cells (2 periods)  4.4. cell division (2 periods)  **(36 periods)** | **Cycles**  **5. Reproduction of Plants (8 periods)**  5.1. Sexual reproduction in flowering plants. (2 periods)  5.2. Parts of a flower (2 periods)  5.3. Life cycle of a flowering plant. (2 periods)  5.3.1. Germination (1 period)  5.3.2. How plant grow (1 period)  5.4. Asexual reproduction. (2 periods)   1. **Reproduction of Animals and Humans (18 periods)**   6.1. Why do living things reproduce? (2 periods)  6.2. Way of reproduction. (2 periods)  6.3. Asexual reproduction in animals. (3 periods)  6.4. Sexual reproduction in animals (3 periods)  6.5. Life cycles of animals. (4 periods)  6.5.1. Life cycle of insects (1 periods)  6.5.2. Life cycle of amphibians (1 periods)  6.5.3. Life cycle of birds (1 period)  6.5.4. Life cycle of mammals and compare life cycle of plants to animals (1 period)  6.6. Heredity. (4 periods)   1. **Interactions Within the Environment (The web of Life)(10 periods)**    1. Food chains (3 periods)    2. Energy transfer in a food chain. (3 periods)    3. Food web (4 periods)   **(36 periods)** | **Interactions**   1. **The Environment (12 periods)**    1. Environment (3 periods)    2. Observing and Describing a Local Environment (3 periods)    3. Interacting Factors within an Environment (2periods)    4. Factors that Affect the Survival of an Organism (2periods)    5. Unfavorable Environment (2periods) 2. **Adaptation (6 periods)**    1. Plant Adaptations (3 periods)    2. Animal Adaptations (3 periods) 3. **Humans and Their Environment**   **(8 periods)**   * 1. Effects of Human Activities on the Environment (2periods)   2. Human Interaction with the Environment Influences the Development of Science and Technology (2periods)   3. Biotechnology and Telecommunication (2 periods)   4. Artificial (Human - made) Materials (2periods)  1. **Rocks and Their Classification (10 periods)**  * Igneous rocks(2 periods) * Sedimentary rocks(2 periods) * Metamorphic rocks (3 periods) * Uses of rocks(3 periods)   **(36 periods)** | **Interactions**   1. **Forces (6 periods)**    1. What is force?   (1periods)   * 1. Balanced and unbalanced forces   (1periods)   * 1. The Effects of a Force (1periods)   2. Drawing force diagram (1periods)   3. Different Types of Forces      1. Gravitational force      2. Frictional force (What causes friction?, effect of friction in machines and how to reduce and increase, advantages and disadvantages of friction in daily life)   5.3.3 Elastic spring force  (2periods)   1. **Energy (12 periods)**    1. Sources of Energy (3periods)    2. Forms of Energy (3periods)    3. Conversion of Energy (3periods)    4. Forms and Uses of Energy (3periods) 2. **Light and Shadows (12 periods)**    1. Light sources (Transparent, opaque and translucent materials)(3 periods)    2. Properties of light (Light Travels in Straight Lines) (3 periods)    3. Reflection of light and how we can see the objects (3periods)    4. Shadows (3 periods)       1. Shapes of shadows       2. Sizes of shadows       3. Sunrise and sunset   **8. Growth and Development**  **of the Human body**  **(6 periods)**  8.1 Stages of  Development (3periods)  8.2 Human Body  Systems (3periods)  **(36 periods)** |