# GRADE 4 SCIENCE - SCHEME OF WORK TERM 1

**Republic of Zambia - Ministry of Education**

**Curriculum Philosophy:**

The Grade 4 Science curriculum adopts a competence-based approach that emphasizes active learning, scientific inquiry, and practical application of knowledge. Learners construct understanding through hands-on investigations, real-world problem-solving, and engagement with their local environment. The curriculum values the integration of indigenous knowledge with scientific principles and promotes the development of critical thinking, creativity, collaboration, and environmental stewardship.

**Competence-Based Learning:**

Competence-based learning focuses on what learners can do with their knowledge rather than just what they know. In Grade 4 Science, learners develop competences through:

- Practical investigations and experiments that build scientific inquiry skills
- Project-based learning that applies concepts to real-world situations
- Collaborative activities that develop teamwork and communication
- Problem-solving tasks that require critical and analytical thinking
- Environmental action projects that foster sustainability awareness
- Health and agricultural activities that connect to learners' daily lives

**Curriculum Goals:**

- To develop scientific literacy through observation, investigation, experimentation, and evidence-based reasoning
- To foster understanding of human health, nutrition, and disease prevention for personal and community wellbeing
- To cultivate environmental consciousness and sustainable practices relevant to Zambian contexts
- To build foundational knowledge in life sciences (human body, plants, animals, agriculture) and physical sciences (matter, energy, materials, machines)
- To integrate the seven key competences: Analytical Thinking, Communication, Creativity and Innovation, Collaboration, Critical Thinking, Environmental Sustainability, and Problem Solving
- To connect scientific concepts to local Zambian contexts including agriculture, health challenges, environmental issues, and economic development

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| WK | TOPIC/ SUB-TOPICS | PRESCRIBED COMPETENCES | SPECIFIC COMPETENCES | CONTENT/ CONCEPT | LEARNING ACTIVITIES | EXPECTED STANDARD | STRATEGIES/ METHODS | ASSESSMENTS | MATERIAL/ RESOURCES | REFERENCES |
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| | **4.1 THE HUMAN BODY**<br>**4.1.1 The Respirator** | Demonstrate understanding of the respiratory system in the | **4.1.1.1** Demonstrate understanding of the respiratory | • Respiratory system anatomy (nose, trachea, bronchi, lungs)<br>• Breathing | • Demonstrating understanding of the | • Understanding of respiratory system | • Collaborative learning<br>• Inquiry-based learning<br>• Model-making | • Observation of participation<br>• | • Respiratory system charts<br>• Drawing materials<br>• Modeling materials | • Science Textbook Grade 4<br>• CDC Teacher's |

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| | **y System** | human body | system in the human body | mechanism and air flow<br>• Respiratory diseases (Bronchitis, Tuberculosis, Influenza, Asthma)<br>• Respiratory health promotion | respiratory system<br>• Analysing main parts (nose, trachea, bronchi, lungs)<br>• Drawing the human respiratory system<br>• Making models and charts showing air movement<br>• Investigating respiratory diseases<br>• Creating self-care plan for respiratory health | demonstrated satisfactorily | • Scientific drawing<br>• Project-based learning<br>• Health education | Assessment of drawings and labels<br>• Evaluation of models<br>• Self-care plan rubric<br>• Oral questioning | (cardboard, paper, straws)<br>• Reference books on diseases<br>• Chart paper | Guide<br>• Health resources |
| | **4.1.2 The Blood Circulatory System** | Demonstrate understanding of the blood circulatory system in the human body | **4.1.2.1** Demonstrate understanding of the blood circulatory system in the human body | • Blood components (red cells, white cells, platelets, plasma)<br>• Heart structure and function<br>• Blood vessels | • Describing the Blood Circulatory System<br>• Analysing blood components<br>• Drawing | • Understanding of blood circulatory system demonstrated appropriatel | • Collaborative drawing<br>• Model construction<br>• Demonstration method<br>• Inquiry-based investigation | • Model assessment<br>• Drawing accuracy check<br>• Pulse rate calculation accuracy | • Blood circulation charts<br>• Heart model/diagram<br>• Drawing materials<br>• Stopwatch<br>• Modeling materials | • Science Textbook Grade 4<br>• CDC Teacher's Guide<br>• Community |

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| | | | | (veins, arteries)<br>• Blood circulation pathway<br>• Pulse rate<br>• Cardiac diseases and prevention | and labeling the heart collaboratively<br>• Making longitudinal model of blood circulation<br>• Making longitudinal model of heart<br>• Tracking blood flow in vessels<br>• Analysing importance of circulatory system<br>• Calculating pulse rate<br>• Investigating cardiac diseases<br>• Creating cardiac disease prevention plan | y | • Data collection and analysis<br>• Project-based learning | • Disease investigation report<br>• Prevention plan evaluation<br>• Practical demonstrations | • Reference materials on cardiac health | health resources |
| | **4.2 NUTRITIO** | Classify foods found | **4.2.1.1** Classify | • Food groups (cereals and | • Collecting variety of | • Foods classified | • Hands-on sorting activities | • Observation | • Real food samples or pictures | • Science Textbook |

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| | **N AND HEALTH 4.2.1 Classification of Food** | in the local environment based on their nutritional content | foods found in the local environment based on their nutritional content | tubers; fish, insects and meat; pulses, beans, nuts and seeds; dairy; vegetables; fruits)<br>• Food nutrients (proteins, carbohydrates, fats, vitamins, minerals)<br>• Raw and processed foods<br>• Local food varieties | foods from local environment<br>• Sorting foods into respective groups based on nutritive content<br>• Classifying food nutrients into proteins, carbohydrates, fats, vitamins and minerals | into respective groups correctly | • Group work<br>• Classification exercises<br>• Discussion method<br>• Real-object learning | during sorting<br>• Classification accuracy<br>• Group work assessment<br>• Oral questioning<br>• Practical test | • Sorting containers<br>• Food group charts<br>• Nutritional content tables<br>• Food cards | Grade 4<br>• Nutrition guides<br>• Local market resources |
| | **4.2.2 Healthy Diets** | Practise eating healthy diets | **4.2.2.1** Practise eating healthy diets | • Balanced diet principles<br>• Dietary needs for different persons<br>• Portion control (Apportionment)<br>• Healthy living practices (light exercises, BMI test, water intake) | • Designing healthy diets for persons with different dietary needs<br>• Discussing importance of eating smaller quantities | • Eating healthy diets practised accordingly | • Diet planning<br>• Discussion method<br>• Problem-based learning<br>• Decision-making activities<br>• Health education | • Diet design quality<br>• Discussion participation<br>• Understanding of balanced nutrition<br>• Application of principles<br>• Self- | • Diet planning templates<br>• Food pyramid/plate diagrams<br>• BMI charts<br>• Health reference materials<br>• Nutritional guidelines | • Science Textbook Grade 4<br>• MOH nutrition guidelines<br>• Health education materials |

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| | | | | | from all food groups regularly<br>• Making informed choices about healthy living | | | assessment | | |

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| | **4.3 THE ENVIRONMENT**<br>**4.3.1 Air, Water and Foodborne Diseases** | Assess the ability to prevent air, water and food-borne diseases | **4.3.1.1**<br>Assess the ability to prevent air, water and food-borne diseases | • Types of diseases (airborne, waterborne, foodborne)<br>• Causative agents (fungi, bacteria, parasites, viruses)<br>• Transmission mechanisms<br>• Prevention methods (reducing smoke, wearing masks, planting trees, safe water handling, handwashing, safe food storage) | • Investigating airborne, waterborne and foodborne diseases<br>• Identifying causative agents<br>• Practising ways of preventing diseases (reducing smoke, wearing masks, planting trees, safe water handling/storage, handwashing, safe food storage) | • Ability to prevent air, water and food-borne diseases demonstrated accordingly | • Investigation/inquiry method<br>• Demonstration method<br>• Practical activities<br>• Health education<br>• Role-play<br>• Field activities | • Observation during demonstrations<br>• Participation in prevention practices<br>• Investigation report<br>• Practical assessment of techniques<br>• Project presentation | • Disease information charts<br>• Causative agent diagrams<br>• Masks, soap, water containers<br>• Food storage containers<br>• Handwashing facilities<br>• Tree seedlings | • Science Textbook Grade 4<br>• MOH disease prevention guides<br>• Community health materials |
| | **4.3.2 Environmental Managemen** | Manage natural resources and waste in the | **4.3.2.1**<br>Manage natural resources and | • Natural resources (biotic and abiotic factors)<br>• Importance of | • Describing natural resources and wastes | • Natural resources and waste in the | • Field trips<br>• Discussion method<br>• Problem-solving approach | • Participation in field activities<br>• Waste | • Waste collection bins<br>• Sorting containers<br>• Three Rs posters | • Science Textbook Grade 4<br>• |

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| | t | environment | waste in the environment | resources (raw materials for industries, fresh air, water and food, income, tourism)<br>• Types of waste (liquids and solids)<br>• Waste management strategies (Three Rs: Re-use, Recycle, Reduce; Incinerators) | • Exploring natural resources in local environment<br>• Analysing importance of natural resources<br>• Devising ways of managing natural resources<br>• Identifying types of wastes in local environment<br>• Devising ways of managing solid and liquid wastes (Three Rs: Re-use, Recycle, Reduce; Incinerators) | environment managed correctly | • Project-based learning<br>• Practical activities<br>• Environmental campaigns | management project<br>• Resource identification accuracy<br>• Management plan evaluation<br>• Practical waste sorting | • Natural resource identification guides<br>• Survey templates<br>• Chart paper | Environmental education materials<br>• Local environmental officers |

**Implementation Notes:**

1. **Flexible Pacing:** Teachers should adjust the pace based on learner understanding and local context
2. **Seasonal Alignment:** Agricultural topics should align with planting and growing seasons in Zambia
3. **Safety First:** All practical activities must follow safety protocols, especially experiments and field work
4. **Community Resources:** Engage local farmers, health workers, and other community members as guest speakers and learning resources
5. **Continuous Assessment:** Use formative assessment throughout to inform instruction and support learner progress
6. **Differentiation:** Adapt activities for learners with different abilities and learning needs
7. **Integration:** Look for opportunities to integrate topics and connect to other subjects
8. **Local Context:** Emphasize Zambian examples, challenges, and solutions throughout all topics