Preface

Science plays a great role in every aspect of our lives. The progress of the world is being increasingly determined by science and technology. It is certain that every individual needs some understanding of science to comprehend the world and make best use available resources.

The progress of Maldives depends on its citizens. Our role as educationists is to provide powerful contexts within which students can develop general competencies considered essential for the acquisition of effective, skills necessary for continued education, work and everyday life. Science is crucial in providing this context and it is important that children have a good foundation in science at the primary level irrespective of their specialization at higher levels.

This syllabus is a revision of the former syllabus of general science for grade six and seven. The revisions are based on the revised National Educational Goals of the National Curriculum.

The syllabus emphasizes the need for the development of planning and conducting investigations, gathering and processing data and using appropriate technologies with safety.

During the two years of teaching science this level, it is expected that practical experiences would occupy a minimum of 40 per cent of allocated classroom contact time for each year. The nature and variety of the learning experiences should continuously develop students' expertise in each of the skills areas identified in the syllabus.

Practical work should emphasize hands on activities. Each type of practical work provides opportunities for different types of learning outcomes. It is important to match the type of practical work to the intended learning outcome and to provide a range of practical experiences so that students have the opportunity to develop the wide range of learning outcomes.

Practical work should also include at least one open investigation each year in a selected content area prescribed in the syllabus for that year. The reason being that students need the opportunity to do open investigations if they are to develop the investigation and problem solving skills that are at the heart of scientific literacy.

The contents of the science syllabus are interrelated. Some of them e.g. History of science and scientists and are introduced in grade six and revisited in grade seven. Although other topics may not be repeated in both grades, it is expected that teachers will build on the prior learning of students at all stages

Focused Content Areas for
Grade 6

1. History of Science and Scientists
2. Standard units
3. Measurement
4. Cell theory
5. Classification
6. Unicellular Organisms
7. Air around us
8. Soil
9. Water
10. Matter
11. Materials
12. Technology

Grade 7

1. History of Science and Scientists
2. Implications of Science for Society and Environment
3. Law of Conservation of Energy
4. Electrical Energy
5. Frictional Force
6. Magnetic force
7. Electricity
8. Multi-cellular organisms e.g. Plants
9. Humans
10. An element
11. Mixtures
12. Changes
13. Corals
14. Coral reefs
15. Air Pollution

AIMS OF SCIENCE TEACHING AT GRADE SIX AND SEVEN

Provide learning experiences through which students will:

- Acquire scientific knowledge and skills and develop understanding of the physical world and biological environment.
- Develop the ability to apply their understandings and skill learnt in life situations.
- Develop positive values and attitudes towards science, logic, themselves others and the environment.

GENERAL OBJECTIVES

Knowledge and Understanding: Students will develop knowledge and understanding of

- The history of science and some scientists
- Some implications of science for society and the environment
- Using various kinds of instruments to measure different entities
- Some models theories and laws and structures and systems related to physical world, matter and the living world
- Interactions within the living and physical world.

Skills: Students will develop skills in:

- Planning investigations
- Conducting investigations
- Communicating information and understanding
- Develop problem solving techniques
- Work in groups and individually

Values and Attitudes: Students will develop positive values about and attitudes towards:

- Science
- Themselves and others
- The environment

OBJECTIVES, OUTCOMES AND CONTENT

Objective: Students will gain knowledge of the history of science and scientists

	Content: Students will learn about the **History of science to:**
Outcomes: Students will 1.1 Identify some historical examples of how scientific knowledge has changed people's understanding of the world 1.2 Identify some scientists who have contributed towards scientific knowledge	a) Describe what is science and a Scientist b) Describe historical cases where developments in science have led to the development of new technology c) Describe historical cases where developments or improvements in technology have transformed science d) Describe some of the findings scientists have discovered.

Objective: Students will gain knowledge and understanding of the implications of science for society and the environment

Outcome: Students will	Content: Students will learn about
2.1 Identify options available to the people with regard to scientific developments.	The different options made available due to scientific developments.

Objective: Students will gain knowledge and understanding of using various kinds of instruments to measure different entities.

Outcome: Students will

3.1 Use various instruments to measure a range of entities.

Content: Students will learn about

Standards to:

a) Describe different physical quantities and identify their appropriate units of measurement

Measurements to:

a) Measure the length using a meter ruler
b) Interpret the prefixes milli-, centi- and km
c) Use stop clock and stop watch
d) Find out area of regular and irregular object
e) Find out volume of irregular and regular objects
f) Use balance for measuring mass and weight
g) Read mercury in glass thermometer.

Objective: Students will gain knowledge and Understanding of models, theories and laws and structures and systems related to physical world, matter and the living world.

Outcomes: Students will	Content: Students will learn about the
4.1 Identify and describe forms of energy and the action of forces in common situations	**Law of conservation of energy to:** a) Use models to describe different forms energy **Electrical energy to:** a) Associate electricity with energy transfer in a simple circuit b) Construct and draw circuits to show transfer of energy **Frictional force to:** a) Describe friction as contact force which opposes motion b) Identify everyday situations where friction acts **Magnetic force to:** a) Describe the behaviour of magnetic poles when they are brought close to each other. b) Identify everyday situations where magnets are used.

Objective: Students will gain knowledge and Understanding of models, theories and laws and structures and systems related to physical world, matter and the living world.

Outcomes: Students will	Content: Students will learn about
5.1 Identify conductors and insulators, draw and construct simple series and parallel circuits	**Electricity to:** a) Identify materials that conduct electricity and materials that do not conduct
5.2 Define the word fuse and explain the uses of it.	b) Describes the electrical circuits connect at home c) Identify the three types of wires found in each circuit d) Explain how an earth wire connection works and the importance of ELCB e) Construct series and parallel circuits f) Define the word fuse and describe its uses

Objective: Students will gain knowledge and Understanding of models, theories and laws and structures and systems related to physical world, matter and the living world.

Outcome: Students will

6.1 Describe features of living things

Contents: students will learn about

Cell theory to:

a) Identify that living things are made of cells
b) Draw and label parts of an animal cell and a plant cell.
c) Examine some cells under a microscope
d) Identify and describe the functions of nucleus, cytoplasm, cell membrane, cell wall and chloroplast
e) Describe common characteristics of living things.
f) Distinguish between unicellular and multicellular organisms

Classification to:

a) Explain the organization of organisms.
b) Classify living things into vertebrates and invertebrates
c) Identify a range of animals and plants using simple keys
d) Recognize some endangered creatures in Maldives and the world due to various reasons including human activities.

Unicellular organisms to:

a) Identify that some unicellular organisms have beneficial and some have harmful effects on the living things or the environment.
b) List three main types of organisms which cause diseases to organisms.(Virus, bacteria and fungi)
c) Describe each of these organisms which cause disease.
d) Explain how the infection can spread
e) Identify ways infection can be prevented

Multi-cellular organisms to:

a) Identify various multi cellular organisms including plants
b) State the role of different parts of plants in maintaining the plants as a whole
c) Define germination
d) Examine the conditions necessary for germination.
e) Define the term photosynthesis
f) Describe the conditions necessary for photosynthesis
g) Conduct an experiment to see whether photosynthesis has occurred
h) Define respiration
i) List down the products of respiration
j) Explain the relationship between photosynthesis and respiration

Humans to:

a) State the function of each system in Humans including how digestive system, heart, and lungs operate.
b) Describe the nutrients required for humans to function properly
c) Explain the importance of balanced diet
d) Describe some vitamin deficiency diseases of humans
e) Recognise ways of how people stay healthy
f) Explain the word 'fit'
g) Recognise ways how they can keep them fit and measure fitness
h) Describe the diseases caused by smoking.
i) Identify the poisonous chemicals in the tobacco.
j) Explain ways that people can take care of their body especially skin care, tooth care.

Objective: Students will gain knowledge and understanding of models, theories and laws and structures and systems

Outcomes: Students will	Content: Students will learn about
7.1 Identify the three basic elements of the physical world and describe features of them. (Air, Water and Soil)	**The air around us to:** a) Describe the composition of air and the percentage composition of gases. b) Explain why air is considered a mixture c) Describe the general properties of gases in the air including carbon dioxide, oxygen, nitrogen and other gases. d) Identify oxygen and carbon dioxide by simple chemical tests **Soil to:** a) Describe the formation of soil b) List down the types of soil c) Describe the components of soil d) Investigate the components of soil by a simple method e) Define soil erosion f) Explain the cause of it **Water to:** a) List the different ways water is essential for life and living things b) Explain the properties of water c) Explain the three states it can exist d) Describe the stages of water cycle. e) Describe how water can be polluted. f) Describe the general purification method. g) Define the terms hard and soft water h) Identify how hard water can be softened by a simple method.

Objective: Students will gain knowledge and Understanding of models, theories and laws and structures and systems related to physical world, matter and the living world.

Outcomes: Students will	Content: students will learn about
8.1 Describe matter and their physical properties	**Matter to:** a) Define the word matter and how it exist. b) Describe the three states of matter. c) Describe a number of physical properties such as elasticity, strength, hardness, solubility, melting point, electrical conductivity and heat conductivity. d) Identify similarities and differences among different materials in their properties e) Relate physical properties to their every day uses
8.2 Identify an element as the simplest kind of matter	**An element to:** a) Describe an element as the simplest kind of matter b) Classify elements into metals and non metals according to their characteristics c) Explain some common uses of metals and non metals d) Identify internationally recognised symbols for some common elements (silicon, gold, silver, copper, aluminium, iron, hydrogen, nitrogen and carbon.
8.3 Identify some common mixtures and describe them and identify some common appropriate techniques for separating components in a mixture	Content: students will learn about **Mixtures to:** a) Define the word mixture b) Identify some common mixtures c) Describe aqueous mixtures in terms of solute, solvent and solution d) Identify situations where the process of filtration, sedimentation, sieving chromatography, evaporation, crystallisation and magnetic attraction are appropriate to separate components of mixtures.

Objective: Students will gain knowledge and Understanding of models, theories and laws and structures and systems related to physical world, matter and the living world.

Outcomes: Students will	Content: students will learn about
9.1 Identify different materials and classify them according to their uses	**Materials to:** a) Identify various ways everyday objects can be classified b) Identify differences among various everyday objects in terms of physical properties c) Identify the uses of various materials according to their properties
9.2 Describe some observable changes in our environment	Content: students will learn about **Changes to:** a) Explain how matter can bring about changes by heat, light, mixing and electricity b) Explain how heat changes matter, combines matter, splits matter c) Define physical and chemical changes. d) Explain that changes can be physical or chemical. e) Explains some common examples of physical and chemical changes.

Objective: Students will gain knowledge and understanding of interactions within the living and the physical world.

Outcomes: Students will	Content: students will learn about
10.1 Describe how coral and their islands are formed.	**Corals to:** a) Examine different types of corals b) Recognise the conditions necessary for the growth of coral
10.2 Identify and describe the human impact on some of natural resources of the earth .	Content: students will learn about **Coral reefs to:** a) Explain how coral reefs are formed b) Describe some impact of human activities on coral reefs c) Identify some examples of marine life in the reef, lagoon. And deep sea. d) Identify some adaptive features of marine organism. d) Identify creatures in Maldives and world that are endangered due to human activities
10.3 Identify some ways how human contributes towards pollution of air	Content: students will learn about **Air pollution to:** a) Recognise the sources of common air pollutants b) Describe the harmful effects of the pollutants to living things and the environment c) Recognize the measures to control air pollution. d) Describe the greenhouse effect and global warming, thinning of the ozone layer and acid rain. e) Identify measures to control air pollution.

		Content: students will learn about **Technology to:**
10.4	Identify using examples, common simple devices and explains why they are used	a) Discuss technological developments that have made easier for scientists to collect information about, and monitor events in, the natural and physical world.

Objective: Students will develop skills in planning investigation

11.1 Outcome: Students will Produce a plan to investigate a problem with guidance	Content: students will learn to **Identify data sources to:** a) Describe a problem or a question that can be tested b) Identify what type of information to be collected c) Identify the appropriate units to be used in collecting data d) Formulate an appropriate way to record the data or information

---

Objective: Students will develop skills in conducting investigations

Outcome: Students will 12.1 Follow a set of instruction given to undertake an investigation	Content: students will learn to **Perform investigation to:** a) Follow the instruction given in performing the investigation b) Record data using appropriate units c) Demonstrate the use of safe and hygienic work practices **Plan and get experience to:** a) Identify the variables that can be kept the same b) Specify the dependant and independent variables in controlled experiments c) Describe ways to reduce the errors and reduce the risk to themselves and others when working in the lab or field.

Objective: Students will develop skills in communicating information and Understanding.

Outcome: Students will	Content: students will learn to
13.1 Present the data and information in a systematic manner.	**Process information to:** a) Organise data using a variety of methods including diagrams, tables, bar charts, pie charts. b) Identify trends, patterns in the information.

Objective: Students will gain skills in developing scientific thinking and problem solving techniques.

Outcome: Students will	Content skills: Students will learn to
14.1. Draw conclusions based on information available.	**Think critically to:** a) Justify inferences in light of gathered information b) Identify data which support or discount a hypothesis or a question investigated.

Objective: Students will gain skills in working individually and in groups.

Outcome: students will	Content Skills: Students will learn to
15.1. Complete a variety of individual and group tasks with guidance.	**Work individually to:** a) Independently plan, conduct and communicate information and solve problems b) Accept responsibility of maintaining a safe environment for themselves and others **Work in teams to:** a) Negotiate and allocate individual roles to members of the team b) Identify the task given c) Accept personal responsibility for maintaining the safe working environment for the group.

Objective: Students will develop positive values about and attitudes towards, science, themselves, others and the environment.

Outcomes: Students will	Content: values and attitudes
16.1 Demonstrate confidence and a willingness to make decisions and to take responsible actions.	**Students will learn to:** a) Develop a positive view of themselves and their capabilities b) Demonstrate a willingness to make decisions and to take responsibility for their actions c) Complete the activities to achieve a reasonable end point.
16.2. Respect truthfulness and integrity	a) Be honest and open in their dealing with others b) Respect the rights and properties of others
16.3. Recognise the role of science in providing information and increase an understanding of the world around them.	a) Show an awareness that scientific information can only be judged on the basis of scientific evidence.
16.4. Aware of their responsibilities to conserve, protect and maintain the environment for future generations.	a) Appreciate and be curious about the nature and the environment