



## Life Sciences – Years 1 & 2 SEC Programme

### INTRODUCTION

This syllabus is based on the Science Curriculum Framework and emphasizes the need for a **balance between the acquisition of science knowledge, skills and attitudes**.

The Science Curriculum Framework is derived from the Policy Framework for the Teaching and Learning of Science. It encapsulates the thrust of science education in Singapore to prepare our students to be sufficiently adept as effective citizens, able to function in and contribute to an increasingly technologically-driven world.

Central to the curriculum framework is the inculcation of the spirit of scientific inquiry. The conduct of inquiry is founded on three integral domains of

- (a) Knowledge, Understanding and Application,
- (b) Skills and Processes and
- (c) Ethics and Attitudes.

These domains are essential to the practice of science. The curriculum design seeks to enable students to view the pursuit of science as meaningful and useful. Inquiry is thus grounded in knowledge, issues and questions that relate to the roles played by science in daily life, society and the environment. In addition, as and when the topics lend themselves, the technological applications, social implications and the value aspects of science are also considered. It also emphasizes the broad coverage of fundamental concepts in the natural and physical world.

*(adapted from Science Syllabus for Lower Secondary, CPDD)*

### CURRICULUM GOALS

Knowledge, Understanding and Application of	Skills and Processes	Ethics and Attitudes
<ul style="list-style-type: none"> <li>• Scientific phenomena, facts, concepts and principles</li> <li>• Scientific vocabulary, terminology and conventions</li> <li>• Scientific instruments and apparatus including techniques and aspects of safety</li> <li>• Scientific and technological applications</li> </ul>	<p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Posing questions</li> <li>• Formulating hypothesis</li> <li>• Defining the problem</li> <li>• Generating possibilities</li> <li>• Predicting</li> <li>• Observing</li> <li>• Using apparatus and equipment</li> <li>• Comparing</li> <li>• Classifying</li> <li>• Inferring</li> <li>• Analysing</li> <li>• Evaluating</li> <li>• Verifying</li> <li>• Communicating</li> </ul> <p><b>Processes</b></p> <ul style="list-style-type: none"> <li>• Creative problem-solving</li> <li>• Planning investigation</li> <li>• Decision-making</li> </ul>	<ul style="list-style-type: none"> <li>• Curiosity</li> <li>• Creativity</li> <li>• Objectivity</li> <li>• Integrity</li> <li>• Open-mindedness</li> <li>• Perseverance</li> <li>• Responsibility</li> </ul>

### ASSESSMENT MODES

Assessment for the Year 1 & 2 SEC Programme will comprise of coursework / practical assessment and a common test and a final assessment in the form of a Year-end examination.

The table below summarises the student assessment modes for both years.

Internal Assessment Modes	Weighting
<b>Year 1</b>	
<b>Term 1 – 3</b> School Assessments	30%
<b>Term 4</b> Year-end Examination	70%
<b>Year 2</b>	
<b>Term 1-3</b> School Assessments	30%
<b>Term 4</b> Year-End Examination	70%

## YEAR 1 SEC Life Sciences Outline

The overarching theme for Year 1 SEC:  
**Diversity and Microbes.**

1. Basic Units of Life – Organelles, Functions and Processes
  - Cell structures and organization: Cell membrane
  - Organelles: Nucleus, Chloroplast, Mitochondrion
  - Processes & Data Management: Cellular Respiration; Variables & Tables
2. Diversity of Life and Interactions
  - Energy Flow
  - General Ecology
  - Soil Ecology
  - Inter-relationship of living things
3. Diversity of Microorganism
  - Bacteria
  - Basic Microbiology skills
  - Antibiotics
  - Virus
  - Fungi
4. STEM Module (Inquiry Based Learning)
  - Rain Garden

## YEAR 2 SEC Life Sciences Outline

The overarching theme for Year 2 SEC:  
**Cellular Processes and Plant and Animal Physiology**

1. Enzymes
  - Characteristic and Function of enzymes
2. Cellular Transport
  - Diffusion, Osmosis and Active Transport
3. Nutrition in Plants
  - Minerals and nutrition affecting plant growth
4. Seeds and Germination
  - Seed structure and factors affecting germination
5. Hydroponics
  - Hydroponics system and their functions
6. Transport in Plants
  - Structure, function and adaptation of plant transport system
7. Transport in Humans
  - Structure, function and adaptation of human transport system
8. Nutrition in Man
  - Minerals and nutrition affecting human growth
9. The Human Digestive System
  - Structure, function and adaptation of human digestive system
10. Sexual Reproduction in Man
  - Structure, function and adaptation of human reproductive system
11. Sexually Transmitted Infections (STIs) and Contraception
  - Symptoms and Treatment of STIs
  - Methods of Contraception

