

The Curriculum and Approaches to Learning		Key Programmes / Competitions
To cultivate the joy of learning Science by developing students' knowledge, skills and attitudes in scientific-thinking through a well-designed curriculum that focuses on scientific inquiry and authentic learning. To prepare students for a life-long passion in learning Science and enable them to innovate and contribute to a technologically-driven society.		<p>Selected school competitions and enrichment programmes.</p> <p>All class structured group work develops communication competency.</p> <p>All data based and planning questions develop adaptive thinking competency.</p>
Term / Week	Learning Experiences (Chapter, Activity)	Learning Outcomes & Assessment
1/ 1-2	Chapter 9: Nutrition and Transport in Flowering Plants [W2] Practical 1: Year 2013 (Q2a only: test for starch in variegated leaf)	W0: back to school program W4: 29-30 Jan (CNY)
1/ 3-6	Chapter 10: Organisms and their Environment [W6] Practical 2: Year 2010 (test for starch & RS & protein, energy content/burn biscuits, drawing & magnification) + Year 2023 (comment on procedure with suggestion for improvement)	WA1 (W9 Day 2): C7 (Respiration in Humans), C9 (Nutrition and Transport in Flowering Plants) *Adaptive Thinking competency (Chapter 9 & 10)
1/ 7-10	Chapter 11: Molecular Genetics [W10] Practical 3: Year 2022 (plant reproduction & syringe skills)	
2/ 1-4	Chapter 12: Reproduction in Humans [W3] Practical 4: Year 2021 (test for starch in chickpea, enzyme concentration on rate of product formation, osmosis – planning)	W2: 31 Mar (Hari Raya Puasa) W4: 18 Apr (Good Friday) W6: 1 May (Labour Day) W8: Student Learning Fest* W8: 12 May (Vesak Day) W10: MTL Intensive (Sec 4E5N only)
2/ 5-9	Chapter 13: Inheritance June Holiday: Practical 5: Year 2017 (osmosis in potato cells, drawing & magnification) + 2011 (planning question) Practical 6: Year 2016 (test for starch & <u>reducing sugars</u> & <u>gases</u> , drawing & effect of temp on enzyme activity in potato) June Holiday HW: Year 2020 Yearly paper	WA2 (W6): C6 (Transport in Humans), C8 (Infectious Diseases), C10 (Organisms and their Environment)

3/ 1-3	<p>[W1] Practical 7: Year 2019 (test for starch & reducing sugars, enzymes/transport in plants) + Year 2018 planning question</p> <p>[W2] Practical 8: Year 2015 (enzyme / pH change in milk)</p> <p>[W3] Practical 9: Year 2024 (determining concentration on unknown sample by comparing it with known concentrations of other samples)</p>	<p>W2: 7 July (Youth Day)</p> <p>W6: 8 Aug (ND celebration)</p> <p>W7: 11 Aug (ND School Hol)</p> <p>W8: Start of Prelim Exams</p> <p>W10: 4 Sep (Teachers' Day Celebration)</p> <p>W10: 5 Sep (Teachers' Day)</p> <p>Timed-Practice (W5): C11 (Molecular Genetics), C12 Reproduction in Humans, C13 Inheritance</p>
3/ 4-7	<p>Revision and Prelim</p> <p>- Yearly papers from 2021 to 2024</p>	
4/1-10	<p>Prelim Script Checking / Revision for O-levels</p>	<p>W6: 20 Oct (Deepavali)</p>

Fostering Adaptive Thinking

Through Chapter 9: Nutrition and Transport in Plants & Chapter 10: Organisms and Their Environment [SLF: Interdisciplinary outdoor inquiry-based learning]

(1) Purpose

The purpose of this interdisciplinary learning journey is to deepen students' understanding of the interconnection between organisms and their environment, incorporating aspects of nutrition and transport in plants. By visiting Rifle Range Nature Park, students examine real-life examples of ecosystems and conservation efforts. This hands-on approach encourages students to explore the roles of science and geography in environmental stewardship, fostering an appreciation for the balance between human activities and nature and supporting them in developing informed perspectives on sustainability and biodiversity.

(2) Process

This interdisciplinary, inquiry-based learning journey, designed collaboratively by Biology and Geography teachers, takes students to Singapore's Rifle Range Nature Park. With a focus on sustainability, conservation, and the human-nature relationship, students investigate the impact of urbanization on forests. Working in groups, students select inquiry questions and gather evidence to support their positions, engaging critical thinking, collaboration, and civic literacy skills. After the learning journey, students create infographics to present their findings. Teachers then provide structured feedback based on a rubric assessing each group's stance on their inquiry question, the relevance of their supporting evidence, and the aesthetic appeal of their infographic. Through this iterative process, students refine their ideas, gain insights into effective communication, and develop a nuanced understanding of environmental issues.

(3) Impact on Students' Learning

This learning journey fosters critical 21st-century skills in students, such critical thinking, collaboration, and information literacy, while cultivating civic awareness. By actively exploring an environment within their own community, students develop a greater appreciation for conservation efforts and Singapore's park restoration initiatives. The activity's interdisciplinary nature promotes adaptive thinking, as students draw connections between biology and geography, enhancing their understanding of how both fields contribute to sustainable ecosystem management. Ultimately, students learn to view natural spaces not just as passive environments but as dynamic systems integral to societal and environmental health.