

Biology

Curriculum Structure

The Biology Curriculum serves as a continuation of the Science (S1-3) Curriculum. With careful consideration of students' prior knowledge and everyday experiences, it is designed to cover major aspects of biology, and to highlight relevance of biology to social, technological and environmental issues. The curriculum framework has three interconnected components: Learning Targets, Curriculum Emphases, and Compulsory and Elective Parts. Figure 2.1 represents the relationships between the various components.

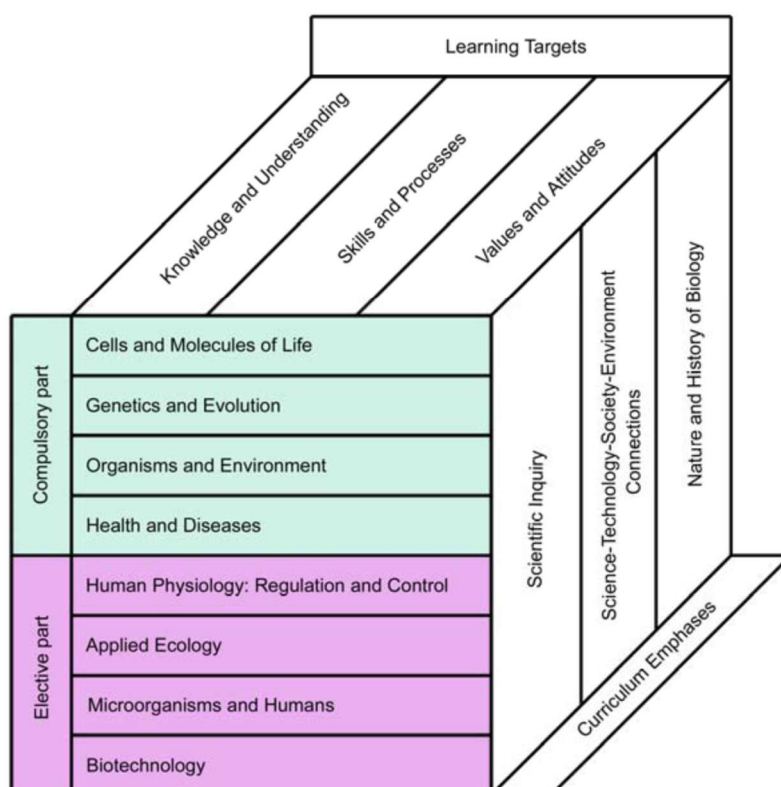


Figure 2.1 Diagrammatic Representation of the Biology Curriculum Framework

The curriculum consists of compulsory and elective parts. The compulsory part covers a range of content that enables students to develop understanding of fundamental biological principles and concepts, and the scientific process skills. There are four topics in the compulsory part – *Cells and Molecules of Life*, *Genetics and Evolution*, *Organisms and Environment*, and *Health and Diseases*.

The elective part is designed to cater for the diverse interests, abilities and needs of students. It aims to provide an in-depth treatment of some of the topics in the compulsory part, an application of essential knowledge and concepts, or an extension of certain areas of study. There are four topics in the elective part – *Human Physiology: Regulation and Control*, *Applied Ecology*, *Microorganisms and Humans*, and *Biotechnology*. Students are required to study any two out of the four topics.

Suggested Time Allocation

	<i>Suggested lesson time (Hours)</i>
<i>Scientific Investigations</i>	20
 <i>Compulsory Part (200 hours)</i>	
I. Cells and Molecules of Life	44
a. Molecules of life*	
b. Cellular organisation*	
c. Movement of substances across membrane*	
d. Cell cycle and division*	
e. Cellular energetics*	
II. Genetics and Evolution	38
a. Basic genetics*	
b. Molecular genetics*	
c. Biodiversity and evolution*	
III. Organisms and Environment	84
a. Essential life processes in plants*	
b. Essential life processes in animals*	
c. Reproduction, growth and development*	
d. Coordination and response *	
e. Homeostasis*	
f. Ecosystems*	
IV. Health and Diseases	14
a. Personal health*	
b. Diseases*	
c. Body defence mechanisms	

Elective Part (50 hours, any 2 out of 4)

V. Human Physiology: Regulation and Control	25
a. Regulation of water content (osmoregulation)	
b. Regulation of body temperature	
c. Regulation of gas content in blood	
d. Hormonal control of reproductive cycle	
VI. Applied Ecology	25
a. Human impact on the environment	
b. Pollution control	
c. Conservation	
d. Global issues	
VII. Microorganisms and Humans	25
a. Microbiology	
b. Use of microorganisms	
c. Microbial genetics	
d. Harmful effects of microorganisms	
VIII. Biotechnology	25
a. Techniques in modern biotechnology	
b. Applications in biotechnology	
c. Bioethics	

Total lesson time: 250

MODE OF ASSESSMENT

The public assessment of Biology will consist of a public examination component and a school-based assessment component as outlined in the following table:

Component		Weighting	Duration
Public Examination	Paper 1 Compulsory part of the curriculum	60%	2 hours 30 minutes
	Paper 2 Elective part of the curriculum	20%	1 hour
School-based Assessment (SBA)		20%	

Public Examination

Paper 1 comprises two sections: A and B. Section A consists of multiple-choice questions and carries 18% of the subject mark. Section B includes short questions, structured questions and an essay question, and it carries 42% of the subject mark. Candidates have to attempt **all** questions in Paper 1.

Paper 2 consists of structured questions set on the four elective topics of the curriculum. Candidates are to attempt questions from any **two** of the four electives. Paper 2 carries 20% of the subject mark.

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