

**TIN KA PING SECONDARY SCHOOL  
BIOLOGY  
FORM THREE TEACHING SYLLABUS**

| Chapter   | Content / objectives  | Language objectives   | Experiments   | Aids / resources  | Activities (STS connection)   | Generic skills * |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|------------------|---|---|---|---|---|---|---|---|---|---|---|---|
|   |   |   |   |   |   | 1                | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |   |   |   |   |
|   |   | Students should be able to:   |   |   |   |                  |   |   |   |   |   |   |   |   |   |   |   |   |
| 1.1 What is biology?                            | • To know what biology is about   |   |   | Powerpoint:<br><i>Exploring Life</i><br>Historical charts on key-discoveries in biology | <p><b>Attitudes:</b></p> <ul style="list-style-type: none"> <li>● appreciate the wonders of the natural world</li> <li>● obey safety rules in lab.</li> </ul> <p>1.1 Biological fun facts (Activity book p.1)</p> <p>1.2 Why didn't our jelly set? (Activity book p.2)</p> <ul style="list-style-type: none"> <li>▪ 1.3 Relationship between biology and our society (Activity book p.4)</li> </ul> |                  |   |   |   |   |   |   |   | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1.2 The characteristics of organisms            | • To know the seven characteristics of organisms                                      | use the following sentence patterns:<br>● Both ...<br>● ... while ...<br>● ... whereas ...<br>● ... however ...<br>to compare living things & non-living things |   |   |   |                  |   |   |   |   |   |   |   |   |   | ✓ | ✓ | ✓ |
| 1.3 How do scientists study biology?            | • To learn the basic scientific methods that scientists adopted when studying biology |   | 1.1 Design an investigation of the effect of fresh pineapple on the setting of jelly<br><i>Practical Workbook</i> p.1-1 | • Smart learning CD1—<br>Simulation experiments— <i>Why didn't our jelly set?</i>       |   |                  |   |   |   |   |   |   |   |   |   | ✓ | ✓ | ✓ |
| 1.4 Why should we study biology?                | • To know the aim of studying biology   |   |   |   |   | ✓                | ✓ |   |   |   |   |   |   |   |   | ✓ | ✓ | ✓ |
| 1.5 Major biological discoveries and inventions | • To appreciate major biological discoveries and inventions                           |   |   |   |   |                  |   |   |   |   |   |   |   |   |   |   |   |   |
| 5.1 Humans as heterotrophs                      | • To know the mode of nutrition of humans and its characteristics                     |   |   |   | 11.1 The inside story of food (Activity book p.58)  |                  |   |   |   |   |   |   |   |   |   | ✓ | ✓ | ✓ |

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|                                     |  |                     |  |   |  |                  |   |  |  |  |   |  |   |   |   |  |
| 5.2 The food requirements of humans | <ul style="list-style-type: none"> <li>To identify the sources and functions of different food substances</li> <li>To be aware of the corresponding deficiency symptoms</li> </ul> |                     |  | Story: The discovery of Vit. C  | 11.2 Importance of water to our body (Activity book p.59)<br>STS: Bk. 1 P.44 |                  |   |  |  |  |   |  | ✓ | ✓ | ✓ |  |
| 5.3 Food tests                      | <ul style="list-style-type: none"> <li>To test for the presence of different food substances using appropriate food tests</li> </ul>   |                     | <p>5.1 Detection of food substances by food tests<br/><i>Practical Workbook</i> p.5-1</p> <p>5.2 Investigation of food substances present in common foodstuffs<br/><i>Practical Workbook</i> p.5-9</p> <p>5.3 Design an investigation to compare the amount of vitamin C in different fruits and vegetables<br/><i>Practical Workbook</i> p.5-13</p> | <ul style="list-style-type: none"> <li>Smart learning CD2— Video-for-lab—<br/><i>Design an investigation to compare the vitamin C content in different fruits and vegetables</i></li> </ul> |  | ✓                | ✓ |  |  |  | ✓ |  | ✓ | ✓ | ✓ |  |
| 5.4 Balanced diet                   | <ul style="list-style-type: none"> <li>To state the importance of a balanced diet</li> <li>To be aware of the health problems resulting from improper diet</li> </ul>              |                     |  | <ul style="list-style-type: none"> <li>Textbook p.5-31</li> <li>HKDSE Biology Exam Practice p.12</li> </ul>   | STS: Bk. 2 P.86<br>A vegetarian diet   |                  |   |  |  |  | ✓ |  | ✓ | ✓ | ✓ |  |
| <b>Uniform Test</b>                 |  |                     |  |   |  |                  |   |  |  |  |   |  |   |   |   |  |
| 6.1 The process of human nutrition  | <ul style="list-style-type: none"> <li>To identify the main processes of human nutrition</li> </ul>  |                     |  |   |  |                  |   |  |  |  | ✓ |  | ✓ | ✓ | ✓ |  |
|                                     |  |                     |  |   |  |                  |   |  |  |  |   |  |   |   |   |  |

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|   |  |  |  |   |  |                  |   |  |   |   |  |   |   |   |
| 6.2 The human digestive system                  | <ul style="list-style-type: none"> <li>To identify the alimentary canal and various glands in the human digestive system</li> <li>To identify different parts of the alimentary canal</li> </ul>   |  | 6.1 Examination of the mammalian alimentary canal and its associated glands<br><i>Practical Workbook</i> p.6-1   | <ul style="list-style-type: none"> <li>Textbook p.6-27</li> <li>HKDSE Biology Exam Practice p.15</li> <li>Trunk model showing digestive system</li> </ul>                                     | STS: Diets of people in different countries<br>Health problems resulting from an improper diet<br>Relation of diet, eating habit and oral hygiene to tooth decay<br>‘Fluoridated water’ versus ‘fluoride toothpaste with calcium’  |                  |   |  | ✓ |   |  | ✓ | ✓ | ✓ |
| 6.3 Ingestion of food                           | <ul style="list-style-type: none"> <li>To state the functions of each type of tooth</li> <li>To be able to describe the structure of a tooth</li> <li>To know what is dentition and be able to identify the two sets of teeth in humans</li> </ul>                               |  |  | Tooth model<br>Skulls of herbivores, carnivores and omnivores   | 6.1 Identifying the types of teeth   |                  |   |  |   | ✓ |  | ✓ | ✓ | ✓ |
| 6.4 Movement of food along the alimentary canal | <ul style="list-style-type: none"> <li>To know the features of peristalsis along the alimentary canal</li> </ul>   |  |  | <ul style="list-style-type: none"> <li>Smart learning CD2— Animations— <i>Swallowing and peristalsis</i></li> </ul>   | 6.2 Demonstration of peristalsis using a model   |                  |   |  |   |   |  | ✓ | ✓ | ✓ |
| 6.5 Digestion of food                           | <ul style="list-style-type: none"> <li>To be able to compare physical and chemical digestion</li> <li>To identify the functions and characteristics of different digestive juices</li> <li>To state the reactions involved in different parts of the alimentary canal</li> </ul> | use the following sentence patterns:<br><ul style="list-style-type: none"> <li>It is responsible for ...</li> <li>It is used for ...</li> </ul> to describe the functions of different digestive structures<br><br>present the arguments clearly using language forms of sequence like:<br>To begin with...<br>First, ...<br>Next, ...<br>Then, ...<br>After that, ...<br>Finally, ... | 6.2 Design an investigation of the action of digestive enzymes<br><i>Practical Workbook</i> p.6-3<br><br>6.3 Investigation of the effect of bile salts on oil<br><i>Practical Workbook</i> p.6-9 |   | The occurrence of gastro-intestinal disorders<br><u>Attitudes:</u> <ul style="list-style-type: none"> <li>achieve better eating habits &amp; health</li> <li>learn through daily experience</li> <li>do not waste food</li> <li>appreciate the functions of diff. parts of a human body</li> </ul> | ✓                | ✓ |  |   | ✓ |  | ✓ | ✓ | ✓ |
| 6.6 Absorption of digested food                 | <ul style="list-style-type: none"> <li>To know the adaptation of the small intestine for food absorption</li> <li>To trace the route of absorption of various food substances</li> </ul>   |  | 6.4 Simulation of digestion and absorption in the small intestine using dialysis tubing<br><i>Practical Workbook</i> p.6-11  | <ul style="list-style-type: none"> <li>Smart learning CD2— Animations— <i>Digestion and absorption</i></li> <li>Smart learning CD2— Animations— <i>Effect of bile salts on oil</i></li> </ul> | 6.3 Fate of food in our body (Activity book p.82)  | ✓                | ✓ |  |   | ✓ |  | ✓ | ✓ | ✓ |

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|                                   |   |   |  |  |   | ✓                | ✓ |  |   | ✓ |  | ✓ | ✓ | ✓ |
| 6.7 Assimilation of absorbed food | <ul style="list-style-type: none"> <li>To know how are the absorbed food molecules assimilated inside cells</li> <li>To state the roles of the liver</li> </ul>   |   | Microscopic examination a transverse section of the small structure of a villus  | • Smart learning CD2— Animations— <i>Digestion and absorption</i>                                |   | ✓                | ✓ |  |   | ✓ |  | ✓ | ✓ | ✓ |
| 6.8 Egestion                      | <ul style="list-style-type: none"> <li>To state the role of egestion</li> </ul>   |   |  |  |   | ✓                | ✓ |  |   | ✓ |  | ✓ | ✓ | ✓ |
| 8.1 The transport system          | <ul style="list-style-type: none"> <li>To know the purpose of having a transport system in humans</li> <li>To know the constituents of human circulatory system</li> </ul>  |   |  |  | <ul style="list-style-type: none"> <li>Textbook p.8-31</li> <li>HKDSE Biology Exam Practice p.22</li> </ul>                               | ✓                | ✓ |  |   | ✓ |  | ✓ | ✓ | ✓ |
| 8.2 The blood                     | <ul style="list-style-type: none"> <li>To identify the composition of the blood and the corresponding functions</li> </ul>  | use the following sentence patterns: <ul style="list-style-type: none"> <li>It is responsible for ...</li> <li>It is used for ...</li> </ul> to describe the functions of different parts of the transport system | 8.1 Examination of a blood smear<br><i>Practical Workbook</i> p.8-1  |  |   |                  |   |  | ✓ |   |  | ✓ |   | ✓ |
| 8.3 The blood vessels             | <ul style="list-style-type: none"> <li>To identify different types of blood vessels and the relationships between them</li> <li>To identify the functions and adaptations of blood vessels</li> <li>To know how blood pressure changes along the blood vessels</li> </ul> |   | 8.2 Examination of the transverse sections of an artery and a vein<br><i>Practical Workbook</i> p.8-4<br><br>8.3 Examination of the capillary flow in a fish tail fin<br><i>Practical Workbook</i> p.8-6 | • Smart learning CD2— Video-for-lab— <i>Examination of the capillary flow in a fish tail fin</i> | 8.1 Measurement of blood pressure (Activity book p.125)<br><br>8.2 Action of valves in preventing backflow of blood (Activity book p.126) | ✓                | ✓ |  | ✓ |   |  | ✓ |   | ✓ |

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|  |  |   |  |   |   |                  |   |   |   |   |  |  |  |   |  |  |   |
| 8.4 The heart  | <ul style="list-style-type: none"> <li>To identify different structures of the heart</li> <li>To identify blood vessels related to the heart</li> </ul>      |   | 8.4 Dissection and examination of a pig heart<br><i>Practical Workbook p.8-9</i> | <ul style="list-style-type: none"> <li>Smart learning CD2—<br/>Video-for-lab—<i>Dissection and examination of a pig heart</i></li> <li>Smart learning CD2—<br/>Animations—<i>Pumping action of the heart</i></li> </ul> | 8.4 Relationship between diet, lifestyle and the incidence of coronary heart disease, stroke and high blood pressure (Activity book p.122)  | ✓                | ✓ |   | ✓ |   |  |  |  | ✓ |  |  | ✓ |
| Revision   |  |   |  |   |   |                  |   |   |   |   |  |  |  |   |  |  |   |
| Easter Holiday   |  |   |  |   |   |                  |   |   |   |   |  |  |  |   |  |  |   |
| Uniform Test   |  |   |  |   |   |                  |   |   |   |   |  |  |  |   |  |  |   |
| Uniform Test Review                                    |  |   |  |   |   |                  |   |   |   |   |  |  |  |   |  |  |   |
| 8.5 Blood circulation                                  | <ul style="list-style-type: none"> <li>To know how blood is circulated in the pulmonary and systemic circulation</li> </ul>                                  | <p>present the arguments clearly using language forms of sequence like:</p> <p>To begin with...<br/>First, ...<br/>Next, ...<br/>Then, ...<br/>After that, ...<br/>Finally, ...</p> |  |   |   |                  |   |   | ✓ |   |  |  |  | ✓ |  |  | ✓ |
| 8.6 Exchange of materials between blood and body cells | <ul style="list-style-type: none"> <li>To know the exchange of materials between blood and body cells</li> <li>To know how tissue fluid is formed</li> </ul> |   | Practical 8.3-8.4  |   | <p>Examination of the capillary flow in a fish tail fin</p> <p>Dissection &amp; examination of a pig heart</p> <p>STSE: Relationship between diet, lifestyle an the incidence of coronary heart disease, stroke and high blood pressure</p> | ✓                | ✓ | ✓ | ✓ | ✓ |  |  |  | ✓ |  |  | ✓ |
|  |  |   |  |   |   |                  |   |   |   |   |  |  |  |   |  |  |   |

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|                            |   |   |             |                  |   |                  |  |   |   |   |  |   |  |  |  |  |  |  |
| 8.7 Lymphatic system       | <ul style="list-style-type: none"> <li>To identify different components of lymphatic system</li> <li>To know the functions of lymphatic system</li> </ul> | use the following sentence patterns: <ul style="list-style-type: none"> <li>● It is responsible for ...</li> <li>● It is used for ...</li> </ul> to describe the functions of different parts of the transport system       |             |                  | <u>Attitude:</u><br>appreciate the functions of diff. parts of a human body |                  |  | ✓ | ✓ | ✓ |  | ✓ |  |  |  |  |  |  |
|                            |   | use the following sentence patterns: <ul style="list-style-type: none"> <li>● Both ...</li> <li>● ... while ...</li> <li>● ... whereas ...</li> <li>● ... however ...</li> </ul> to compare circulatory & lymphatic systems |             |                  |   |                  |  |   |   |   |  |   |  |  |  |  |  |  |
|                            | <ul style="list-style-type: none"> <li>Common diseases of circulatory and lymphatic systems</li> </ul>  |   |             |                  |   |                  |  |   |   |   |  |   |  |  |  |  |  |  |
| <b>REVISION &amp; TEST</b> |   |   |             |                  |   |                  |  |   |   |   |  |   |  |  |  |  |  |  |
| <b>Yearly Examination</b>  |   |   |             |                  |   |                  |  |   |   |   |  |   |  |  |  |  |  |  |

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|----------------------|---------------------------|---------------|
| 1. collaboration     | 2. communication          | 3. creativity |
| 4. critical thinking | 5. information technology | 6. numeracy   |
| 7. problem solving   | 8. self-management        | 9. study      |

Textbooks: H W Yung, K M Ho, Y K Ho, K H Tam L P Tong., *NSS Mastering Biology, 2<sup>nd</sup> edition*, Oxford, Bk. 1A, 1B