



## SAMPLE COURSE OUTLINE

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**HUMAN BIOLOGY**  
**GENERAL YEAR 11**

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## **Acknowledgement of Country**

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## Sample course outline

### Human Biology – General Year 11

#### Unit 1

The Scientific Method content aligns with the Science Understanding and Scientific Literacy content of the unit and is integrated throughout the learning experiences.

#### Scientific method

- research a given topic and construct questions for investigation
- determine the appropriate methodology for investigations
- design scientific investigations, including the formulation of investigable questions and/or hypotheses; materials required, procedure to be followed to collect valid and reliable data, and identification of safety and ethical considerations
- conduct risk assessments to identify potential hazards and prevent potential incidents and injuries
- use equipment and techniques safely, competently and methodically for the collection of valid and reliable data, and use equipment with precision, accuracy and consistency
- represent qualitative and quantitative data in meaningful and useful ways, including the construction of appropriately labelled tables, process quantitative data using appropriate mathematical relationships and units, and draw appropriate graphs
- analyse data to identify and describe trends, patterns and relationships, including the use of appropriate mathematical techniques, and recognise errors and limitations in data
- draw conclusions consistent with the evidence and relevant to the question being investigated, identify further evidence that may be required, and recognise the limitations of conclusions
- evaluate the investigative procedure, including the relevance, accuracy, validity and reliability of data, and suggest improvements
- communicate information and ideas in a variety of ways using scientific conventions and terminology, including the selection and presentation of data and ideas to convey meaning to selected audiences in written, oral and multimedia formats

Week	Key teaching points
1–2	<p><b>Life processes</b></p> <ul style="list-style-type: none"> <li>• all living things carry out the life processes of respiration, feeding, excretion, movement, reproduction, responding to stimuli and growth</li> </ul> <p><b>Hierarchical structural organisation of the body</b></p> <ul style="list-style-type: none"> <li>• the body has a hierarchical structural organisation of cells, tissues, organs and systems</li> </ul> <p><b>Cell structure and function</b></p> <ul style="list-style-type: none"> <li>• body cells contain specialised structures with specific functions, including the nucleus, mitochondria, cytoplasm and cell membrane</li> </ul>
3	<p><b>Digestive system</b></p> <p><b>Nutrients contained in food</b></p> <ul style="list-style-type: none"> <li>• nutrients (carbohydrates, proteins, lipids, vitamins, minerals and water) are compounds in foods essential to life and health that provide energy, the building blocks for repair and growth, and substances necessary to regulate chemical processes.</li> </ul> <p><b>Structure and function of the digestive system</b></p>

Week	Key teaching points
	<ul style="list-style-type: none"> <li>the structures of the digestive system facilitate the breakdown of food to compounds that can be readily absorbed into the blood for use by cells</li> </ul>
4	<p><b>Digestion</b></p> <p><b>Mechanical digestion</b></p> <ul style="list-style-type: none"> <li>mechanical digestion is required to reduce the size of food pieces and to increase the surface area on which chemical digestion can act</li> </ul> <p><b>Chemical digestion</b></p> <ul style="list-style-type: none"> <li>chemical digestion involves the use of enzymes (amylase, protease and lipase) to chemically break down food for absorption; enzymes have optimal pH and temperature ranges</li> </ul>
5	<p><b>Absorption</b></p> <ul style="list-style-type: none"> <li>absorption from the small and large intestine involves the transport of materials (diffusion, osmosis and active transport) into the blood and lymph</li> </ul>
6	<p><b>Elimination</b></p> <ul style="list-style-type: none"> <li>materials eliminated from the digestive system include indigestible contents, excess materials and some metabolic wastes</li> </ul> <p><b>Dysfunctions of the digestive system</b></p> <ul style="list-style-type: none"> <li>the function of the digestive system can be compromised by diseases and conditions that reduce the efficiency of digestion or absorption of food</li> <li>distinguish between opinion, anecdote and evidence, and scientific and non-scientific ideas</li> </ul> <p><b>Assessment task 1 – Practical assessment (5%)</b></p>
7	<p><b>Musculoskeletal system</b></p> <ul style="list-style-type: none"> <li>the support and movement of the body is facilitated by the five functions of the skeletal system (support, movement, protection, production of blood cells, storage of minerals) and the macroscopic structure of long bones</li> </ul>
8–9	<p><b>Joints</b></p> <ul style="list-style-type: none"> <li>the location and structure of joints in the skeleton (fixed, slightly movable, freely movable) allow for a range of movement</li> <li>skeletal muscles work in groups around joints to bring about flexion and extension</li> </ul> <p><b>Injuries to muscles, bones and joints</b></p> <ul style="list-style-type: none"> <li>damage to muscles, bones and joints could be due to movements beyond the capabilities of the musculoskeletal system</li> <li>distinguish between opinion, anecdote and evidence, and scientific and non-scientific ideas</li> <li>use reasoning to construct scientific arguments, and to draw and justify conclusions consistent with the evidence and relevant to the question under investigation</li> <li>identify examples of where the application of scientific knowledge may have beneficial, harmful and/or unintended consequences</li> </ul> <p><b>Assessment task 2 – Supervised written assessment (10%)</b></p>
10–11	<p><b>Assessment task 3 – Project (15%)</b></p>
12	<p><b>Dietary decisions</b></p> <ul style="list-style-type: none"> <li>the Australian Dietary Guidelines and the Australian Guide to Healthy Eating provide advice for health and wellbeing</li> <li>distinguish between opinion, anecdote and evidence, and scientific and non-scientific ideas</li> <li>use reasoning to construct scientific arguments, and to draw and justify conclusions consistent with the evidence and relevant to the question under investigation</li> <li>identify examples of where the application of scientific knowledge may have beneficial, harmful and/or unintended consequences</li> </ul> <p><b>Commence Assessment task 4 – Investigation (20%)</b></p>

Week	Key teaching points
13	<p><b>Dietary choices</b></p> <ul style="list-style-type: none"> <li>• dietary choices can be influenced by various factors including food intolerances, food allergies, diseases, disorders, ethical values and sociocultural factors</li> </ul> <p><b>Food labels</b></p> <ul style="list-style-type: none"> <li>• food labels assist with informed food purchases, healthier eating choices and protect public health and safety</li> </ul> <p><b>Continue Assessment task 4 – Investigation</b></p>
14–15	<ul style="list-style-type: none"> <li>• the <i>Australian Dietary Guidelines</i> and the <i>Australian Guide to Healthy Eating</i> provide advice for health and wellbeing</li> <li>• dietary choices can be influenced by various factors including food intolerances, food allergies, diseases, disorders, ethical values and sociocultural factors</li> <li>• distinguish between opinion, anecdote and evidence, and scientific and non-scientific ideas</li> <li>• use reasoning to construct scientific arguments, and to draw and justify conclusions consistent with the evidence and relevant to the question under investigation</li> <li>• identify examples of where the application of scientific knowledge may have beneficial, harmful and/or unintended consequences</li> </ul> <p><b>Complete Assessment task 4 – Investigation</b></p>

## Unit 2

The Scientific Method content aligns with the Science Understanding and Scientific Literacy content of the unit and is integrated throughout the learning experiences.

### Scientific method

- research a given topic and construct questions for investigation
- determine the appropriate methodology for investigations
- design scientific investigations, including the formulation of investigable questions and/or hypotheses; materials required, procedure to be followed to collect valid and reliable data, and identification of safety and ethical considerations
- conduct risk assessments to identify potential hazards and prevent potential incidents and injuries
- use equipment and techniques safely, competently and methodically for the collection of valid and reliable data, and use equipment with precision, accuracy and consistency
- represent qualitative and quantitative data in meaningful and useful ways, including the construction of appropriately labelled tables, process quantitative data using appropriate mathematical relationships and units, and draw appropriate graphs
- analyse data to identify and describe trends, patterns and relationships, including the use of appropriate mathematical techniques, and recognise errors and limitations in data
- draw conclusions consistent with the evidence and relevant to the question being investigated, identify further evidence that may be required, and recognise the limitations of conclusions
- evaluate the investigative procedure, including the relevance, accuracy, validity and reliability of data, and suggest improvements
- communicate information and ideas in a variety of ways using scientific conventions and terminology, including the selection and presentation of data and ideas to convey meaning to selected audiences in written, oral and multimedia formats

Week	Key teaching points
1	<p><b>Health checks</b></p> <ul style="list-style-type: none"> <li>• the purpose of regular health checks is to check for current or emerging medical concerns, assess the risk of future medical issues and prompt the maintenance of a healthy lifestyle</li> <li>• undertaking regular health checks assists in the early detection of medical problems and increases the chances for effective treatment</li> <li>• diagnosis of a medical problem leads to the development of individual treatment plans</li> <li>• distinguish between opinion, anecdote and evidence, and scientific and non-scientific ideas</li> <li>• use reasoning to construct scientific arguments, and to draw and justify conclusions consistent with the evidence and relevant to the question under investigation</li> </ul>
2–4	<p><b>Circulatory system</b></p> <ul style="list-style-type: none"> <li>• the transport of materials around the body is facilitated by the structures of the circulatory system</li> <li>• the structure of the heart facilitates the efficient flow of blood around the body</li> <li>• the blood vessels have specialised structures that enable efficient distribution of blood around the body</li> <li>• the blood is made up of plasma, blood cells (red and white) and platelets, each with particular functions</li> <li>• the removal of toxins and maintenance of healthy blood sugar levels are two of the many important functions performed by the liver</li> </ul>

Week	Key teaching points
	<ul style="list-style-type: none"> <li>• measuring blood pressure and heart rate provide information about circulatory system health and blood tests provide information about liver health</li> <li>• the function of the circulatory system can be compromised by cardiovascular diseases</li> <li>• the function of the liver can be compromised by disease associated with excessive alcohol intake</li> <li>• the purpose of regular health checks is to check for current or emerging medical concerns, assess the risk of future medical issues and prompt the maintenance of a healthy lifestyle</li> <li>• undertaking regular health checks assists in the early detection of medical problems and increases the chances for effective treatment</li> <li>• diagnosis of a medical problem leads to the development of individual treatment plans</li> <li>• distinguish between opinion, anecdote and evidence, and scientific and non-scientific ideas</li> <li>• use reasoning to construct scientific arguments, and to draw and justify conclusions consistent with the evidence and relevant to the question under investigation</li> <li>• identify examples of where the application of scientific knowledge may have beneficial, harmful and/or unintended consequences</li> </ul> <p><b>Commence Assessment task 5 – Investigation (20%)</b></p>
5–7	<b>Complete Assessment task 5 – Investigation</b>
8–10	<p><b>Respiratory system</b></p> <ul style="list-style-type: none"> <li>• exchange of gases between the external environment and the blood is facilitated by the structures of the respiratory system</li> <li>• the mechanics of breathing help to maintain the efficient exchange of gases in the lungs</li> <li>• spirometry, pulse oximetry and the use of stethoscopes provide information about respiratory system health</li> <li>• the function of the respiratory system can be compromised by diseases and conditions that reduce the efficiency of gas exchange</li> <li>• the purpose of regular health checks is to check for current or emerging medical concerns, assess the risk of future medical issues and prompt the maintenance of a healthy lifestyle</li> <li>• undertaking regular health checks assists in the early detection of medical problems and increases the chances for effective treatment</li> <li>• diagnosis of a medical problem leads to the development of individual treatment plans</li> <li>• distinguish between opinion, anecdote and evidence, and scientific and non-scientific ideas</li> <li>• use reasoning to construct scientific arguments, and to draw and justify conclusions consistent with the evidence and relevant to the question under investigation</li> <li>• identify examples of where the application of scientific knowledge may have beneficial, harmful and/or unintended consequences</li> </ul> <p><b>Assessment task 6 – Supervised written assessment (10%)</b></p>
11–13	<p><b>Urinary system</b></p> <ul style="list-style-type: none"> <li>• the removal of excess water, metabolic wastes and toxins from the blood is facilitated by the structures of the urinary system (details of filtration, reabsorption and secretion processes not required)</li> <li>• urinalysis is a set of screening tests that help diagnose conditions such as urinary tract infections, kidney disorders and diabetes</li> <li>• dysfunction of the kidneys may result in serious illness due to accumulation of toxic substances in the blood</li> <li>• the purpose of regular health checks is to check for current or emerging medical concerns, assess the risk of future medical issues and prompt the maintenance of a healthy lifestyle</li> <li>• undertaking regular health checks assists in the early detection of medical problems and increases the chances for effective treatment</li> <li>• diagnosis of a medical problem leads to the development of individual treatment plans</li> </ul> <p><b>Assessment task 7 – Practical assessment (5%)</b></p>
14–15	<b>Assessment task 8 – Project (15%)</b>