

# Erindale College

<b>Assessment Period:</b>	<b>2022 S1</b>
<b>Course:</b>	<b>HUMAN BIOLOGY</b>
<b>Unit:</b>	<b>The Essentials of Human Life (1.0)</b>
<b>Accreditation:</b>	<b>T</b>
<b>Year:</b>	<b>12</b>

## Specific Unit Goals

This unit should enable students to:

- understand how important stem cells are in the human body and the role their differentiation plays in the developments of the human body
- understand how the classification of tissue types can enhance the study of their function in the human body
- understand how the different tissue types present in the human body maintain and control the flow of fluids and other materials
- use science inquiry skills to design, conduct, evaluate and communicate investigations into the function and nature of tissue at macroscopic and microscopic level
- evaluate, with reference to empirical evidence, investigations into tissue structure and the function of cell differentiation
- communicate human biological understanding using qualitative and quantitative representations in appropriate modes and genres

## Content Descriptions

### Science Inquiry Skills

- identify, research and refine questions for investigation; propose hypotheses; and predict possible outcomes
- design investigations, including the procedure/s to be followed, the materials required, and the type and amount of primary and/or secondary data to be collected; conduct risk assessments; and consider research ethics
- conduct investigations, including monitoring body functions; using microscopy techniques; and performing dissections safely, competently and methodically for the collection of valid and reliable data
- represent data in meaningful and useful ways; organise and process data to identify trends, patterns and relationships; qualitatively describe sources of measurement error, and uncertainty and limitations in data; and select, synthesise and use evidence to make and justify conclusions
- interpret a range of scientific and media texts, and evaluate processes, claims and conclusions by considering the quality of available evidence; and use reasoning to construct scientific arguments
- select, construct and use appropriate representations including labelled diagrams and images of various cells, tissues, to communicate conceptual understanding, solve problems and make predictions
- communicate to specific audiences and for specific purposes using appropriate language, nomenclature, genres and modes, including scientific reports

### Science as a Human Endeavour

- science is a global enterprise that relies on clear communication, international conventions, peer review and reproducibility
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development of complex models and/or theories often requires a wide range of evidence from multiple individuals and across disciplines

- advances in science understanding in one field can influence other areas of science, technology and engineering
- the use of scientific knowledge is influenced by social, economic, cultural and ethical considerations
- the use of scientific knowledge may have beneficial and/or harmful and/or unintended consequences
- scientific knowledge can enable scientists to offer valid explanations and make reliable predictions
- scientific knowledge can be used to develop and evaluate projected economic, social and environmental impacts and to design action for sustainability

## Science Understanding

- the human body has more than two hundred different types of cells of varying shape, size and function
- cell specialisation in humans occurs during embryonic development
- stem cells have the ability to divide by mitosis and differentiate into many different tissues, depending on the level of cell potency
- a germ layer is a group of cells in an embryo that interact with each other as the embryo develops and contribute to the formation of all organs and tissues
- three germ layers in a human embryo are the endoderm, mesoderm and ectoderm
- most human organs contain representatives of all four primary tissue types; epithelial, connective, muscular and nervous tissue
- some forms of epithelium give rise to the glands of the body during embryonic development
- epithelial tissue forms the barrier between different environments (for example the skin lies between the internal and external environments of the human body which acts to protect, absorb, excrete and act as a sensory receptor)
- different sorts of epithelial tissue serve different functions (for example, simple squamous epithelium allows the rapid and efficient passage of materials by diffusion)
- connective tissue not only functions to bind and support other tissues but also to protect, insulate and transport (blood)
- muscle tissue exerts force through the conversion of chemical energy to mechanical energy to either enable the mobility of the body, or force fluid through the body (for example, cardiac muscle)
- nervous tissue of the human body is the master receiver of sensory input, processor of information and communicator through a combination of chemical and electrical signals
- field of tissue engineering, which aims to repair, regenerate and/or improve scarred tissue, holds great potential for extending tissue therapy (for example, synthetic epidermal layer can be used as artificial human skin to treat burn victims)

## Assessment Tasks

Name	Due Date	Weighting
Assignment 1	2 February - 25 February	20%
Exam 1	29 March - 1 April	30%
Assignment 2	26 April - 20 May	20%
Exam 2	14 June - 17 June	30%

## Specific Unit Information

Students will need to purchase a booklet from the front office. No other materials will be required for this unit

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## School Assessment Information

### **For penalties for late and non-submission of work**

See [BSSS Policy and Procedure Manual 4.3.10](#) for further information.

### **For academic integrity**

See [BSSS Policy and Procedure Manual 4.3.12](#) for further information.

### **For appeals processes**

See [BSSS Policy and Procedure Manual 7.2](#) for further information.

### **For moderation procedures (internal and external)**

See [BSSS Policy and Procedure Manual 5](#) for further information.

### **For meshing procedures**

See [BSSS Policy and Procedure Manual 5.4.1](#) for further information.

### **For method of unit score calculation**

See [BSSS Policy and Procedure Manual 4.3.6.2](#) for further information.

### **For procedures for calculating course scores**

See [BSSS Policy and Procedure Manual 4.3.13.2](#) for further information.

## **Achievement Standards for HUMAN BIOLOGY T - Year 12**

	<i>A student who achieves an A grade typically</i>	<i>A student who achieves a B grade typically</i>	<i>A student who achieves a C grade typically</i>	<i>A student who achieves a D grade typically</i>	<i>A student who achieves an E grade typically</i>
<b>Concepts, Models &amp; Applications</b>	<ul style="list-style-type: none"> <li>critically analyses the properties and functions of system components, processes and interactions, and the interplay and effects of factors across a range of scales</li> <li>evaluates applications, limitations, and predictions of theories and models to explain systems and create solutions, with evidence, in unfamiliar contexts</li> <li>evaluates evidence with reference to critical analysis of models and/or theories, and develops evidence-based conclusions and evaluates limitations</li> </ul>	<ul style="list-style-type: none"> <li>analyses the properties and functions of system components, processes and interactions, and the interplay and effects of factors across a range of scales</li> <li>analyses applications, limitations, and predictions of theories and models to explain systems and create plausible solutions, with evidence in familiar contexts</li> <li>analyses evidence with reference to models and/or theories, and develops evidence-based conclusions and discusses limitations</li> </ul>	<ul style="list-style-type: none"> <li>explains the fundamental properties and functions of system components, processes and interactions, and the effects of factors across a range of scales</li> <li>explains applications, limitations, and predictions of theories and models to explain systems and create plausible solutions in familiar contexts</li> <li>describes evidence with reference to models and/or theories, and develops evidence-based conclusions and identifies limitations</li> </ul>	<ul style="list-style-type: none"> <li>describes the fundamental properties and functions of system components, processes and interactions, and the effects of one or more factors</li> <li>describes the nature, functions, limitations and applications of theories and models to create solutions to problems with supporting evidence</li> <li>describes evidence, and develops conclusions with some reference to models and/or theories</li> </ul>	<ul style="list-style-type: none"> <li>identifies the fundamental properties and functions of system components, processes and interactions, and some affective factors</li> <li>identifies the nature, functions, limitations and applications of theories and models, and suggest solutions to problems with supporting evidence</li> <li>identifies evidence, and asserts conclusions with little or no reference to models and/or theories</li> </ul>
<b>Contexts</b>	<ul style="list-style-type: none"> <li>critically analyses epistemology, role of peer review, collaboration, and technology in developing knowledge</li> <li>critically analyses the influence of social, economic, ethical and cultural factors on Science</li> </ul>	<ul style="list-style-type: none"> <li>analyses epistemology, role of peer review and technology in developing knowledge</li> <li>analyses the influence of social, economic, ethical and cultural factors on Science</li> </ul>	<ul style="list-style-type: none"> <li>explains epistemology, role of peer review and technology in developing knowledge</li> <li>explains the influence of social, economic, ethical and cultural factors on Science</li> </ul>	<ul style="list-style-type: none"> <li>describes role of peer review and technology in developing knowledge</li> <li>describes the influence of social, economic, ethical and cultural factors on Science</li> </ul>	<ul style="list-style-type: none"> <li>identifies that scientific knowledge has changed over time</li> <li>identifies the influence of social, economic, ethical and cultural factors on Science</li> </ul>
<b>Inquiry Skills</b>	<ul style="list-style-type: none"> <li>designs, conducts and improves safe, ethical and original inquiries individually and collaboratively, that collect valid, reliable data in response to a complex question</li> <li>critically analyses cause and correlation, anomalies, reliability and validity of data and representations, and critically analyses errors</li> <li>evaluates processes and claims, and provides a critique based on evidence, and critically analyses alternatives</li> <li>reflects with insight on own thinking and that of others, evaluates planning, time management, and use of appropriate independent and collaborative work strategies</li> <li>communicates concisely, effectively and accurately, with scientific literacy in a range of modes, representations, and genres for specific audiences and purposes, and accurate referencing</li> </ul>	<ul style="list-style-type: none"> <li>designs, conducts and improves safe, ethical inquiries individually and collaboratively, that collect valid, reliable data in response to a question</li> <li>analyses cause and correlation, anomalies, reliability and validity of data and representations, and analyses errors</li> <li>explains processes and claims, and provides a critique with reference to evidence, and analyses alternatives</li> <li>reflects on their own thinking and analyses planning, time management, and use of appropriate independent and collaborative work strategies</li> <li>communicates clearly and accurately, with scientific literacy in a range of modes, representations and genres for specific audiences and purposes, and accurate referencing</li> </ul>	<ul style="list-style-type: none"> <li>plans and conducts safe, ethical inquiries individually and collaboratively, that collect valid data in response to a familiar question</li> <li>describes causal and correlational relationships, anomalies, reliability and validity of data and representations, and discusses common errors</li> <li>describes processes and claims, and identifies alternatives with reference to reliable evidence</li> <li>reflects on their own thinking and explains planning, time management, and use of appropriate independent and collaborative work strategies</li> <li>communicates accurately demonstrating scientific literacy, in a range of modes, representations, and genres for specific purposes, and mostly consistent referencing</li> </ul>	<ul style="list-style-type: none"> <li>follows a procedure to conduct safe, ethical inquiries individually and collaboratively, to collect data in response to a simple question with varying success</li> <li>describes trends, relationships and anomalies in data, identifies anomalies, and cites sources of error</li> <li>describes processes and claims, and identifies the need for improvements with some reference to evidence</li> <li>reflects on their own thinking, with reference to planning and the use of appropriate independent and collaborative work strategies</li> <li>communicates demonstrating some scientific literacy, in a range of modes, representations, and genres with some evidence and inconsistent referencing</li> </ul>	<ul style="list-style-type: none"> <li>follows a procedure to conduct safe, ethical inquiries individually and collaboratively, to collect data with little or no connection to a question</li> <li>identifies trends and relationships in data with reference to sources of error</li> <li>identifies processes and the need for some improvements, with little or no reference to evidence</li> <li>reflects on their own thinking with little or no reference to planning, time management, and use of appropriate independent and collaborative work strategies</li> <li>communicates demonstrating limited scientific literacy, in a range of modes and representations, with inconsistent and inaccurate referencing</li> </ul>