

Key Elements: Human Biology (Digestive System)**Estimated Time: 8–10 hours**

By the end of this course, students will have an understanding of the structures and function of the digestive system.

Vocabulary

absorption, anaerobic bacteria, anus, appendix, bile, capillary, cardiac sphincter, chemical digestion, digestive enzyme, digestive tract, duodenum, emulsification, epiglottis, esophagus, gall bladder, gastric juice, hydrochloric acid (HCl), insulin, intestinal juice, lacteals, large intestine (colon), lipase, liver, maltase, microvillus, nuclease, pancreas, pancreatic amylase, pancreatic juice, pepsin, pepsinogen, peptidase, peristalsis, pH, pharynx, physical digestion, protease, pyloric sphincter, rectum, salivary amylase, salivary gland, salivary juice/saliva, small intestine, sodium bicarbonate, stomach, swallowing, trypsin, villus

Knowledge

- structures of the digestive system and their inter-relationships
- components, pH, and digestive actions of salivary, gastric, pancreatic, and intestinal juices

Skills and Attitudes

- interpret graphs, tables, and diagrams
- demonstrate safe and correct dissection technique
- demonstrate correct use of a dissection microscope (e.g., interior surface of stomach and small intestine)
- demonstrate proper technique for handling and disposing of laboratory materials
- create models (e.g., of specific aspects of the digestive system such as peristalsis)
- conduct experiments (e.g., to test the effect of digestive enzymes such as amylase or pepsin)
- communicate results (e.g., using tables, graphs, diagrams, lab reports)
- demonstrate ethical, responsible, co-operative behaviour
- show respect for living things

HUMAN BIOLOGY (DIGESTIVE SYSTEM)

Prescribed Learning Outcomes	Suggested Achievement Indicators
<p><i>It is expected that students will:</i></p>	<p><i>The following set of indicators may be used to assess student achievement for each corresponding prescribed learning outcome.</i></p> <p><i>Students who have fully met the prescribed learning outcome are able to:</i></p>
<p>C1 analyse the functional inter-relationships of the structures of the digestive system</p> <p><i>Suborganizer 'Human Biology (Digestive System)' continued on page 62</i></p>	<ul style="list-style-type: none"> <input type="checkbox"/> identify and give a function for each of the following: <ul style="list-style-type: none"> - mouth - tongue - teeth - salivary glands - pharynx - epiglottis - esophagus - cardiac sphincter - stomach - pyloric sphincter - duodenum - liver - gall bladder - pancreas - small intestine - appendix - large intestine (colon) - rectum - anus <input type="checkbox"/> describe swallowing and peristalsis <input type="checkbox"/> identify the pancreas as the source gland for insulin, and describe the function of insulin in maintaining blood sugar levels <input type="checkbox"/> list at least six major functions of the liver <input type="checkbox"/> explain the role of bile in the emulsification of fats <input type="checkbox"/> describe how the small intestine is specialized for chemical and physical digestion and absorption <input type="checkbox"/> describe the structure of the villus, including microvilli, and explain the functions of the capillaries and lacteals within it <input type="checkbox"/> describe the functions of anaerobic bacteria in the colon <input type="checkbox"/> demonstrate the correct use of the dissection microscope to examine the various structures of the digestive system

Prescribed Learning Outcomes	Suggested Achievement Indicators
<p><i>Suborganizer 'Human Biology (Digestive System)' continued from page 61</i></p> <p>C2 describe the components, pH, and digestive actions of salivary, gastric, pancreatic, and intestinal juices</p>	<ul style="list-style-type: none"><input type="checkbox"/> relate the following digestive enzymes to their glandular sources and describe the digestive reactions they promote:<ul style="list-style-type: none">– salivary amylase– pancreatic amylase– proteases (pepsinogen, pepsin, trypsin)– lipase– peptidase– maltase– nuclease<input type="checkbox"/> describe the role of water as a component of digestive juices<input type="checkbox"/> describe the role of sodium bicarbonate in pancreatic juice<input type="checkbox"/> describe the role of hydrochloric acid (HCl) in gastric juice<input type="checkbox"/> describe the role of mucus in gastric juice<input type="checkbox"/> describe the importance of the pH level in various regions of the digestive tract