



Academic Upgrading

**Biology 20 Placement Test
Study Guide**

Important Information about the SAIT Biology 20 Placement Test

This information guide is designed to prepare students to take the Academic Upgrading Biology 20 Placement Test.

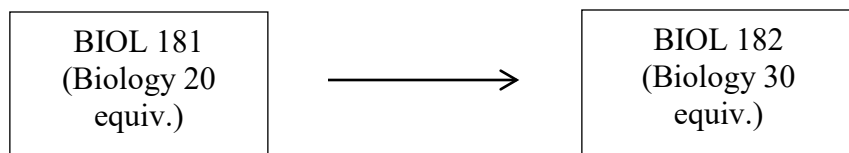
Contact upgrading@sait.ca for details on how to register for and take the test.

This test is designed for upgrading placement purposes only. **This exam may not be used for admission to any SAIT program; that is, this is not a SAIT admission exam. In addition, the results cannot be used at any other educational institution.**

The time allotted for the Biology 20 Placement Test is 45 minutes. It consists of 30 multiple choice questions and covers Grade 11 (Biology 20) material. A mark of 60% is required to pass and allows entrance into BIOL 182 (Biology 30 equivalent).

BIOL 182 is accepted as an admission requirement at other post-secondary institutions in Alberta, but you should always check with the post-secondary institution you are interested in attending (if it is not SAIT) to confirm it will accept the course.

SAIT Academic Upgrading Course Sequence



Preparing for the Biology 20 Placement Test

The placement test covers topics from Alberta Education's Biology 20 course. A Biology 20 Study Guide from the Calgary Public Library or a bookstore will be helpful in reviewing for this test.

Here is a list of the major units and subtopics of those units that questions on the test are selected from. The list is NOT exhaustive but provides an idea of what content to expect on the test.

Ecology:

- food chains/webs, trophic levels; terms used to describe organisms at different levels
- major characteristics of organisms at the domain & kingdom levels (e.g., prokaryotic vs. eukaryotic; photosynthetic vs. not photosynthetic; multicellular vs. unicellular; etc.)
- biomes (major characteristics)
- biogeochemical cycles: water, carbon, nitrogen, phosphorus

Evolution:

- natural selection (major characteristics)
- Darwin and Lamarck
- convergent vs. divergent evolution
- analogous, homologous, and vestigial structures
- adaptive radiation
- graduated vs. punctuated equilibrium (in general terms only)

Photosynthesis:

- location of each major process
- photosystems: order and what takes place in each
- chemiosmosis
- electron carrier name
- Calvin cycle including carbon fixation and glucose production (detailed knowledge of metabolic intermediates is not required)

Cellular Respiration (including glycolysis and fermentation):

- overall process
- location of each major process
- major events and location of glycolysis, Krebs's (citric acid) cycle (detailed knowledge of metabolic intermediates is not required), and electron transport chain
- electron carrier names (specific names of electron transport chain proteins is not required)
- fermentation products (for humans vs. yeast)

Circulatory System:

- chambers, valves, pulmonary arteries and veins, superior & inferior vena cava, aorta, coronary artery
- order of blood flow through the heart and to/from the lungs
- location of oxygenated vs. deoxygenated blood in heart and blood vessels
- electrical control of the heart (key structures)
- major characteristics/roles of arteries/arterioles, capillaries, and venules/veins
- major events in blood clotting

Lymphatic System:

- major roles of the lymphatic system

Respiratory System:

- major structures
- main mechanism of inhalation and exhalation (muscle contraction/relaxation)
- oxygen and carbon dioxide transport methods in the blood

Digestive System

- major structures
- which structures produce which enzymes, and what each enzyme digests
- absorption of nutrients
- role of liver and gallbladder in digestion

Urinary System

- major structures of the kidney (and structures leading from kidney to exit the body)
- the nephron: structures as well as functions of filtration, reabsorption, and secretion
- effects of ADH and aldosterone

Immune System

- body's exterior defenses (in general)
- major features of the innate (non-specific) immune response
- major features of the adaptive (specific) immune response

Motor System

- major structures of skeletal muscle including components of a muscle fibre
- major events and structures involved in skeletal muscle contraction