



# Study Guide

For Placement into Biology 30 (BIOL 182)



## Important Information

The Biology Placement test is a free assessment designed for Academic Upgrading placement purposes only. No section of the test may be used for admission to any SAIT program other than Academic Upgrading. The Biology Placement Test is not accepted for admission to any other institution.

- The passing mark required for eligibility to register in BIOL 182 (Biology 30) is 60%.
- We aim to put students' passing marks on our system within 2 business days of successful completion of the test.
- Students who have been accepted into the Academic Upgrading program can register for the course they are placed into once we have granted them permission based on their passing grades.
- Students who have already taken and passed SAIT's Academic Upgrading courses in Math and Physics ARE NOT required to take a placement test.

## Biology Placement Study Guide

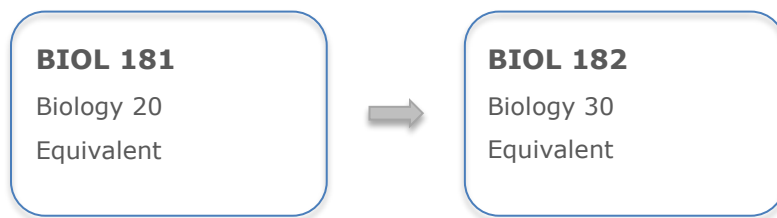
This study guide is designed to prepare students for the Academic Upgrading Biology Placement test for entry into BIOL 182 (Biology 30). Please use the following preparation material to prepare for your online placement test to meet eligibility for BIOL 182.

This test is for placement into Biology 30 equivalency (BIOL 182):

- The placement test will consist of 30 questions.
- Students should allow for 60 minutes to complete the test. An additional 30 minutes has been added to allow for accommodated time, for a total test time of 90 minutes.
- A passing mark of 60% or greater is required in this test for eligibility to register in BIOL 182.
- This test is to be written in the Testing Centre.
- You may choose to utilize the Biology 20 Study Guide from the Calgary Public Library or a bookstore in reviewing for this test.



## SAIT Academic Upgrading Course Sequence



## Placement Test Preparation for Entry into BIOL 182 (Biology 30)

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