



**Course: Life Sciences 11**

**Course Length: 10 months (approx 100 hours)**

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## Life Sciences 11

### Course Description

Life Science is the study of living organisms. In Life Sciences 11 students will learn about evolution and then study each of the five kingdoms of organisms.

### How will your mark be calculated?

Assignments	50%
Projects	10%
Unit Exams	30%
Final Exam	10%

### Course Modules

Each module has units and lessons. Each lesson is designed to take about as long as a typical class period at school, which can vary from about 40 minutes to just over an hour. Try to complete one lesson in one sitting. Aim to complete one unit every month.

### Unit Assignments

At the beginning of each unit you will find a PDF file that contains a set of guided notes that will help you work through the lessons for that unit. Once you have finished the lessons, complete the unit assignment and submit it via the assignment drop box for that unit. Average turnaround time on assignment marking is about 1 week.

### Module Exams

At the end of each module you'll be writing an exam that covers all units/sections from that module. Students will be writing these exams on site at Burnaby Online. All module exams must be pre-booked through your online Biology teacher. Please contact them by email to schedule the test with your full name, date, time and test you would like to write.

## **Labs**

Will you be performing any labs? Yes and no. You won't be "physically" doing any labs in a laboratory setting. You will however be working through the scientific method and laboratory data that is provided to you.

## **Final Exam**

Once you have completed all the coursework, you will need to come into Burnaby Online to write the Final Exam.

## **Students are expected to:**

- Contact the teacher by instant messaging, email when help is needed or questions arise.
- Be actively engaged and submitting work on a regular basis.
- Inform the teacher when they will be inactive for two or more weeks.
- Be aware that if they are inactive in a course for four or more weeks they may be removed from that course.
- Check their email at least twice a week.
- Create and submit completed solutions for all activities in the unit/chapter before requesting a test.
- Cite all sources properly.
- Answer in their own words.
- Check that their work and tests have been marked.
- Make time available to come in to Burnaby Online to write exams.
- Make appointments to write tests at least 2 school days in advance.

## **Communication**

Communication is key to success in this course. Please be sure to contact your instructor email any time a problem arises. We hope you achieve great success in this course. You will be required to complete all assignments and submit them to be marked. When completing each assignment remember to show a good level of understanding of the material covered. All tests and exams will be written at the Burnaby Online office.

## **Resources**

Course materials are presented online via notes, videos, and Internet links.

## Course Learning Activities

Module	Unit	Learning Activities	Completed
Module 1	1: Introduction to Biology	1.1: The Study Life	
		1.2: The Scientific Method	
		1.3: What is a Cell?	
		1.4: Introduction to Evolution	
		Unit 1 Learning Guide	
		Unit 1 Exam	
	2: Cells	2.1: Cell Structure	
		2.2: Differences Between Cells	
		2.3: Respiration	
		2.4: Photosynthesis	
		Unit 2 Learning Guide	
		Unit 2 Exam	
	3: Viruses	3.1: Structure and Function	
		3.2: Reproduction	
		3.3: Viral Diseases	
		Unit 3 Learning Guide	
		Unit 3 Project	
		Unit 3 Exam	
	4: Evolution	4.1: What is Evolution?	
		4.2: Evolutionary Change	
		4.3: Macroevolution	
4.4: Role of DNA			
Unit 4 Learning Guide			
Unit 4 Project			
Unit 4 Exam			
5: Taxonomy	5.1: Organization of Taxons		
	5.2: Important Groups		
	Unit 5 Learning Guide		
	Unit 5 Exam		
Module 2	6: Plants	6.1: Introduction to Plants	
		6.2: Non-Seed Bearing Plants	
		6.3: Vascular Plants with Seeds	
		6.4: Gymnosperms	
		6.5: Angiosperms	
		Unit 6 Learning Guide	
		Unit 6 Exam	
	7: Simple Organisms	7.1: Porifera	
		7.2: Cnidaria	
		7.3: Flatworms	
		7.4: Roundworms	
		7.5: Segmented Worms	
		Unit 7 Learning Guide	
		Unit 7 Exam	
8: Angiosperms	8.1: Mollusks		

		8.2: Echinoderms	
		8.3: Arthropods	
		8.4: Chordates	
		8.5: Vertebrates	
		Unit 8 Learning Guide	
		Unit 8 Exam	
<b>Final</b>		Final Exam	

## **B.C. Curriculum**

**The B.C. Ministry of Education Life Sciences 11 Curriculum Guide is built around 3 Core Big Ideas:**

### **BIG IDEAS**

**Life** is a result of interactions at the molecular and cellular levels.

**Evolution** occurs at the population level.

**Organisms** are grouped based on common characteristics.

## Learning Standards

- **levels of organization:** molecular, cellular, tissue, organ, organ system, organism, population, community, ecosystem
- **cell structure and function:**
  - prokaryotic and eukaryotic
  - unicellular and multicellular
  - cell specialization
- **reproduction:** mitosis, meiosis, budding, conjugation, binary fission
- **energy transformations:**
  - cellular respiration: glucose broken down in the presence of water yields energy (ATP) and carbon dioxide
  - photosynthesis: consumes carbon dioxide and water, produces oxygen and sugars
- **viruses:**
  - at the boundary of living and non-living
  - lytic and lysogenic cycles
  - viral disease: immunity, vaccines, herd immunity, reducing the spread of viral diseases (e.g., H1N1, avian flu, HIV, Ebola, STIs)
- **interrelationships between organisms:** plants as indicators of timing for corresponding events, decaying animals as plant nutrients
- **microevolution:** change within a species that occurs over time in a population
- **changes in DNA:** mutations, population genetics
- **natural selection:** mechanisms of gradual change
- **macroevolution:**
  - major evolutionary changes over long periods of time
  - origin of new species
- **speciation:**
  - neo-Darwinism (gradualism)
  - punctuated equilibrium
  - genetic drift
  - sexual selection
  - adaptive radiation
- **processes of macroevolution:**
  - divergent
  - convergent
  - co-evolution
- **evidence for macroevolution:**
  - embryology
  - mitochondrial DNA
  - molecular evolution
  - fossil record
- **genetic modifications:** gene therapy, GMOs, ethical considerations
- **single-celled and multi-celled organisms:**
  - prokaryotic and eukaryotic
  - aerobic and anaerobic
  - sexual and asexual reproduction
- **trends in complexity:** symmetry, coelom, tissue development, transport, gas exchange, cephalization, reproduction, vascularization, alternation of generations, seed production

## Learning Standards

- **evidence for phylogenetic relationships:** DNA, biochemistry, anatomy, embryology, fossil evidence, biogeography
- **taxonomic principles:**
  - taxa: kingdom, phylum, class, order, family, genus, species
  - phylogenetic tree (cladogram)
  - dichotomous key
- **First Peoples knowledge on classification:**
  - classification of animals based on use (e.g., traditional clothing, food, hunting seasons)
  - classification of BC plants based on use (e.g., food, medicine)
- **domains and kingdoms:**
  - unifying criteria for classification
  - hierarchical nature of diversity
  - changing models based on emerging knowledge