Hayat Universal Bilingual School Course Overview

Subject: Science Grade Level: 10th

Unit –Time	BC Big Ideas (Understand)	**BC Curricular Competencies (Do)**	**BC Content (Know)**	**Instructional Strategies/ Learning Activities**	**Materials & Resources**	**Assessment Methods/Assessment Date**	**Key Vocabulary**
Unit 1: DNA	DNA: How does DNA result in biodiversity? How isThe Structure of DNA related the function of DNA? How do Mutation Occurs?	Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest Collaboratively and individually plan, select, and use appropriate investigation methods, including field work and lab experiments, to collect reliable data (qualitative	**DNA structure and function patterns of inheritance** mechanisms for the diversity of life: **mutation** and its impact on evolution **natural selection** and **artificial selection applied genetics** and **ethical considerations**	Explanation through lectures, activities, labs, virtual labs and video clips on the internet. Project posters. Group discussions, Reading out loud, Practice vocabulary, etc.	BC Grade 10 science text book and workbook. YouTube Videos clips (Structure of DNA, https://www.youtube.com/watch?v=C1CRrtkWwu0) labs (extraction of DNA) and virtual labs (DNA Determination) Related websites (https://ghr.nlm.nih.gov/pri	Students self assessment and peers assessment. Quizzes and Test (Written and Oral practice). Samples of students' work. Projects and presentations. Oral written reports. Journals and learning logs. Performance review. https://quizlet.com/18886328/flashcards Portfolio assessment	DNA, sugar, phosphate, nitrogen base, Nucleotide, Gene, Guanine, cytosine, thymine, adenine, purine, pyrimidine, inheritance, chromatine, double helix, double stranded, DNA structure, Allele, Recessive allele, coding DNA, organelle,

		and quantitative) Seek and analyze patterns, trends, and connections in data, including describing relationships between variables (dependent and independent) and identifying inconsistencies Describe specific ways to improve their investigation methods and the quality of the data Consider the role of scientists in innovation			mer/basics/dna, www.genome.gov		dominant allele, cell, mitochondrion, eukaryote, prokaryote, Codon, anticodon, RNA, phenotype, ribosome, RNA Polymerase, macromolecule, genotype,

Unit 2: Chemical Processes. Chemical Reactions and Radioactivity.	chemical processes In what ways do atoms rearrange during reactions ? How is energy involved in chemical processes? How do chemical processes — personal, local, or global — affect your life? What safety considerations	Make observations aimed at identifying their own questions, including increasingly complex ones, about the natural world Assess risks and address ethical, cultural, and/or environmental issues associated with their proposed methods and those of others	rearrangement of atoms in **chemical reactions** acid-base chemistry law of conservation of mass **energy change** during chemical reactions **practical applications and implications of chemical processes**, including First Peoples knowledge	Explanation through lectures, activities, labs, virtual labs and video clips on the internet. Project posters. Group discussions, Reading out loud, Practice vocabulary, etc.	BC Grade 10 science text book and workbook. YouTube Videos clips (Types of reactions, https://www.youtube.com/watch?v=aMU1RaRulSo , https://www.youtube.com/watch?v=eNsVaUCzvLA labs (Atom model construction	Students self assessment and peers assessment. Quizzes and Test (Written and Oral practice). Samples of students' work. Projects and presentations. Oral written reports. Journals and learning logs. Performance review. Portfolio assessment	Atom, subatomic particle, nucleus, electron, proton, neutron, atomic model, molecule, chemical bond, ionic bond, covalent bond, acid, base, salt, oxide, etc.

	need to be taken into account when dealing with chemicals? Formulate physical or mental theoretical models to describe a phenomenon Communicate scientific ideas, claims, information, and perhaps a suggested course of action, for a specific purpose and audience, constructing evidence-based arguments and using appropriate scientific language, conventions, and representation	Apply **First Peoples perspectives and knowledge**, other **ways of knowing**, and local knowledge as sources of information Evaluate the validity and limitations of a model or analogy in relation to the phenomenon modelled Demonstrate an awareness of assumptions, question information given, and identify bias in their own work and secondary sources Consider the			and metal acid reactions)		

	s Express and reflect on a variety of experiences, perspectives, and worldviews through **place**	changes in knowledge over time as tools and technologies have developed Generate and introduce new or refined ideas when problem solving Contribute to finding solutions to problems at a local and/or global level through inquiry					
Unit 3: Energy	Energy: Where does energy come from and what happens to it? How does energy in the form of	Formulate multiple hypotheses and predict multiple outcomes Select and use	**nuclear energy**and**radiation** law of conservation of energy **potential**and**kinetic** energy **transformatio**	Explanation through lectures, activities, labs, virtual labs and video clips on the internet. Project posters.	BC Grade 10 science text book and workbook. YouTube Videos clips (Types of energy,	Students self assessment and peers assessment. Quizzes and Test (Written and Oral practice). Samples of students' work.	Kinetic energy, potential energy, speed, velocity, displacement, acceleration, force, time, Newton, joule, etc.

	radiation affect living things? How do energy transformations affect the environment?	appropriate equipment, including digital technologies, to systematically and accurately collect and record data Construct, analyze, and interpret graphs (including interpolation and extrapolation), models, and/or diagrams Connect scientific explorations to careers in science Exercise a healthy, informed skepticism and use scientific knowledge	**n of energy** local and global **impacts of energy transformations** from technologies	Group discussions, Reading out loud, Practice vocabulary, etc.	https://www.youtube.com/watch?v=XiNx7YBnM-s https://www.youtube.com/watch?v=IqV5L66EP2E labs (Measuring speed, Measuring Kinetic and potential energy) Related websites www.chem.wisc.edu)	Projects and presentations. Oral written reports. Journals and learning logs. Performance review. Portfolio assessment	

		and findings to form their own investigations and to evaluate claims in secondary sources Transfer and apply learning to new situations					
Unit 4: Earth and the Universe	universe: What evidence supports the big bang theory? How could you model the formation of the universe? How has the advancement of technology deepened our understanding of the universe?	Ensure that safety and ethical guidelines are followed in their investigations Use knowledge of scientific concepts to draw conclusions that are consistent with evidence Analyze cause-	formation of the universe: big bang theory **components of the universe over time astronomical data and collection methods**	Explanation through lectures, activities, labs, virtual labs and video clips on the internet. Project posters. Group discussions, Reading out loud, Practice vocabulary, etc.	BC Grade 10 science text book and workbook. YouTube Videos clips, labs and virtual labs. Related websites. IT labs.	Students self assessment and peers assessment. Quizzes and Test (Written and Oral practice). Samples of students' work. Projects and presentations. Oral written reports. Journals and learning logs. Performance review.	Atmosphere, conduction, convection, coriolis effect, El Niño, greenhouse gases, heat, kilopascal, kinetic molecular theory, molecular theory

		and-effect relationships Evaluate their methods and experimental conditions, including identifying sources of error or uncertainty, confounding variables, and possible alternative explanations and conclusions Consider social, ethical, and environmental implications of the findings from their own and others' investigations Critically analyze the validity of information in secondary sources and				Portfolio assessment	

		evaluate the approaches used to solve problems Contribute to care for self, others, community, and world through individual or collaborative approaches					
Unit 5:							
Unit 6:							
Unit 7:							

Unit 8:							