

Grade	Unit	Curricular Outcome	Career	How it Connects
7	Interactions and Ecosystems	Students will identify examples of human impacts on ecosystems, and investigate and analyze the link between these impacts and the human wants and needs that give rise to them (e.g., identify impacts of the use of plants and animals as sources of food, fibre and other materials; identify potential impacts of waste products on environments).	Environmental Engineer	They, as well as other engineers and geoscientists, are involved in efforts to improve recycling, waste disposal, public health, and control of water and air pollution.
7	Interactions and Ecosystems	Students will analyze personal and public decisions that involve consideration of environmental impacts, and identify needs for scientific knowledge that can inform those decisions	Geophysicist	Using methods such as GPR (Ground Penetrating Radar) for habitat identification to better inform agricultural development (can tell what animals might have burrows underground so they know that might not be best area to grow crops)
7	Interactions and Ecosystems	Students will describe and interpret examples of scientific investigations that serve to inform environmental decision making	Environmental Engineer	They can use their knowledge to create solutions that will protect and also improve the health of living organisms and improve the quality of the environment e.g. they research various ways we can recycle different products or treat contaminated water

7	Plants for Food and Fibre	Students will identify practices that may enhance or degrade soils in particular applications	Civil Engineering	Ground Bioengineering makes use of living materials in near-natural constructions - creates methods to stabilize slopes and embankments and helps with erosion control
7	Heat and Temperature	Students will illustrate and explain how human needs have led to technologies for obtaining and controlling thermal energy and to increased use of energy resources	Mechanical Engineer, Chemical Engineer, Geophysicist and Geologist	A specific example is that geophysicists can help society use and understand geothermal energy, but all careers mentioned need an understanding of heat and temperature to do their jobs effectively.
7	Structures and Forces	Students will demonstrate and describe processes used in developing, evaluating and improving structures that will meet human needs with a margin of safety (most, if not all, outcomes in this unit will be related to Civil Engineering)	Civil Engineering	They deal with designing, constructing and maintaining structures/physical environments
7	Planet Earth	Students will describe and demonstrate methods used in the scientific study of Earth and in observing and interpreting its component materials	Geoscientists and Mining Engineers	They use various investigation methods to understand the Earth and find materials like iron and lithium (needed in various industries – lithium is needed for batteries in electric vehicles, whereas iron and coal are used for steel making). These professionals need to know what minerals contain those materials and where they can be found in the Earth’s composition.

7	Planet Earth	Students will identify evidence for the rock cycle, and use the rock cycle concept to interpret and explain the characteristics of particular rocks	Geoscientists and Mining Engineers	Understanding the rock cycle and how organic materials relate to the rock cycle over time helps professionals classify where oil, coal and other mineral deposits accumulate (for various industries and utilities such as heating, transportation, construction, manufacturing of technology etc.)
7	Planet Earth	Students will investigate and interpret evidence of major changes in landforms and the rock layers that underlie them	Civil Engineers	When constructing homes/various structures on different landforms, say a river valley, understanding the changes that occur in landforms and the rock layers underneath is needed to prevent future structural damage.
7	Planet Earth	Students will describe, interpret and evaluate evidence from the fossil record	Geologists	Geologists use fossil records to confirm the geologic age of the rock formation
8	Mix and Matter	Students will describe examples in which materials are prepared as fluids in order to facilitate transport, processing or use (e.g., converting mineral ores to liquids or slurries to facilitate transport, use of paint solvents to facilitate mixing and application of pigments, use of soapy water to carry away unwanted particles of material)	Petroleum Engineer, Chemical Engineer, Mechanical Engineer and Civil Engineer (Hydraulic Engineering).	These professions need to understand fluids in order help with the transport of materials, properly work with dyes, deal with flow of fluids in pipes or a variety of other responsibilities associated with their specific work and helping society.

8	Mix and Matter	Students will identify, interpret and apply technologies based on properties of fluids	Petroleum Engineer, Chemical Engineer, Mechanical Engineer and Civil Engineer (Hydraulic Engineering).	Same as above. These professions also need to understand technologies dealing with fluids such as a hydraulic lift, pumps, pipes, valves, or industry equipment for extracting and transporting resources.
8	Cells and Systems	Students will describe areas of scientific investigation leading to new knowledge about body systems and to new medical applications	Biomedical Engineering	They can use their research and knowledge about the body and engineering to develop prosthetics
8	Light and Optical Systems	Students will investigate the nature of light and vision; and describe the role of invention, explanation and inquiry in developing our current knowledge	Optical Engineers	They research and design devices that use light and optics (e.g. lenses, microscopes etc.). These devices can sometimes help us understand what we can't see with our own eyes.
8	Mechanical Systems	Students will evaluate the design and function of a mechanical device in relation to its efficiency and effectiveness, and identify its impacts on humans and the environment (Most, if not all, curricular outcomes in this unit should be applicable to mechanical engineering)	Mechanical Engineer (this can overlap into other fields of engineering such as civil, manufacturing, industrial, or biomedical engineering depending on what type of mechanical device is needed)	Engineers create various tools, engines or machines that impact human, society and the environment.

8	Freshwater and Saltwater Systems	Students will describe the distribution and characteristics of water in local and global environments, and identify the significance of water supply and quality to the needs of humans and other living things	Geoscientists and Environmental Engineer	Environmental Engineers are involved in efforts to improve recycling, waste disposal, public health, and control of water and air pollution. Geoscientists are involved in water management projects that restore water supplies to areas facing depletion of resources and investigating the potential sources of said depletion (e.g. Geoscientists Without Borders project in South Africa)
8	Freshwater and Saltwater Systems	Students will analyze human impacts on aquatic systems; and identify the roles of science and technology in addressing related questions, problems and issues	Geoscientists and Environmental Engineer	Same as above.
9	Biological Diversity	Students will identify impacts of human action on species survival and variation within species, and analyze related issues for personal and public decision making	Geoscientists and Chemical Engineer	Geoscientists using methods such as GPR (Ground Penetrating Radar) for habitat identification to better inform habitat and species conservation efforts (for burrowing animals). Chemical engineers involved in chemical treatments for agricultural development.
9	Matter and Chemical Change	Students will describe and interpret patterns in chemical reactions (most, if not all, curricular outcomes should be applicable to chemical engineering)	Chemical Engineer	Understanding how chemicals react is needed for a variety of responsibilities in their profession (e.g., establishing safety procedures for working with chemicals)

9	Environmental Chemistry	Students will investigate and describe, in general terms, the role of different substances in the environment in supporting or harming humans and other living things	Environmental and Chemical Engineer	Environmental engineers are involved in efforts to improve waste disposal, public health, and control of water and air pollution. To do so an understanding of how different substances impact living things is needed. Chemical engineers can also be involved in understanding chemical impacts such as dilution in streams or biomagnification in the food chain
9	Environmental Chemistry	Students will identify processes for measuring the quantity of different substances in the environment and for monitoring air and water quality	Environmental Engineer	They are involved in efforts to improve recycling, waste disposal, public health, and control of water and air pollution.
9	Environmental Chemistry	Students will comprehend information on the biological impacts of hazardous chemicals on local and global environments	Environmental and Chemical Engineer	Environmental engineers may conduct hazardous-waste management studies in which they evaluate the significance of the hazard and advise on treating and containing it. Chemical engineers can also be involved if more in-depth knowledge on chemical impacts are needed (dilution in streams or water supplies, biomagnification in the food chain/web etc.)
9	Environmental Chemistry	Students will describe and evaluate methods used to transport, store and dispose of hazardous household chemicals	Chemical Engineer	Part of a chemical engineers responsibilities can be establishing safety procedures for working with chemicals (this includes transporting, storing and disposing of chemicals)

9	Electrical Principles and Technologies	Students will describe and discuss the societal and environmental implications of the use of electrical energy (most, if not all, curricular outcomes in this unit should be applicable to electrical engineering).	Electrical Engineer	Electrical engineers have various responsibilities, such as evaluating electrical systems, products, components, and applications. This can include identifying and evaluation sources of electrical energy (e.g., batteries), use knowledge of electricity and technologies in research, developing devices, and other applications of their profession
9	Space Exploration	Students will investigate and describe ways that human understanding of Earth and space has depended on technological development	Aerospace Engineer, Materials Engineer, Electrical Engineer, Computer Engineer etc.	Careers in space – Engineers - Canada.ca (asc-csa.gc.ca)
9	Space Exploration	Students will identify problems in developing technologies for space exploration, describe technologies developed for life in space, and explain the scientific principles involved	Aerospace Engineer, Materials Engineer, Electrical Engineer, Computer Engineer etc.	Careers in space – Engineers - Canada.ca (asc-csa.gc.ca)
9	Space Exploration	Students will describe and interpret the science of optical and radio telescopes, space probes and remote sensing technologies	Aerospace Engineer, Materials Engineer, Electrical Engineer, Computer Engineer etc.	Careers in space – Engineers - Canada.ca (asc-csa.gc.ca)
9	Space Exploration	Students will identify issues and opportunities arising from the application of space technology, identify alternatives involved, and analyze implications	Aerospace Engineer, Materials Engineer, Electrical Engineer, Computer Engineer etc.	Careers in space – Engineers - Canada.ca (asc-csa.gc.ca)